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THE CURRENT PROBLEMS OF PHARMACOLOGY AND THERAPEUTICS *

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I appreciate deeply the honor which the Section has conferred on me in selecting me as its chairman. On reflecting how I might express my gratitude by an efficient discharge of the duties of the office, I concluded that the best way would be to select an interesting program and to let the members do the talking. I shall therefore confine my remarks to a brief explanation of the program. In this, we have aimed to reflect the problems which are of current interest in this field of our profession. These problems are partly scientific and partly practical.

The chief scientific problem at the present time is undoubtedly the effective correlation of pharmacology and therapeutics. No one can honestly doubt that the rise of pharmacology or pharmacodynamics — of the scientific experimental investigation of drug action — has played the part of a powerful and predominantly useful ferment in therapeutics. It has not, however, reached the possible maximum of this usefulness. There is still a large field for investigation in scientific pharmacology; but there is also urgent need for pioneer work in applying the results of pharmacology to the problems of the practitioner. This requires not only a willingness to try new things, but also mutual sympathy, understanding and cooperation between clinical and laboratory workers. A number of papers on our program and in our joint symposiums illustrate these various sides of scientific pharmacology and practical therapeutics, and how the two may be rendered mutually helpful. The creation of the Committee on Therapeutic Research, by the Council on Pharmacy and Chemistry of the Association, promises to be a powerful factor in furthering this cooperation and merits the hearty and active support of the members of the Section. Several of the workers who are cooperating with the Committee will present papers and sketch the progress which has been made.

I would emphasize, however, that the progress of therapeutics cannot be delegated to a few investigators. Every member of our profession must participate in his own sphere, if the profession and the public are to obtain the practical benefits. Every practitioner must train himself to learn accurately the nature and effects of remedial measures, both by reading and by observation. This should naturally be begun in the medical schools, and I am happy to say that there has been great improvement in the teaching of this subject. In one direction, however, there is much room for improvement, namely, in reducing the number of medicaments which the student is obliged to study. I would not be understood to mean that most of the drugs on the market are useless; but I do believe that in the present stage of our knowledge or ignorance we would be better off if we used fewer drugs and tried to deepen our knowledge of these. I may dismiss this important matter with these few remarks, because it will be fully dealt with by others, in one of the symposiums.

The standardization of drugs is another matter which is vital to the progress of therapeutics. Most important at the present moment is probably the progress of Pharmacopeial revision. Professor Remington will report on this officially, and the members will be given reasonable opportunity to ask him reasonable questions. One of the symposiums has been arranged for the discussion of special problems in drug standardization. The same symposium will take up the ever-interesting problem of the relations between pharmacists and physicians, because its proper solution is essential to applying the drug standards.

Another problem which is becoming more urgent is the right solution of the patent and trade-mark puzzle, as applied to drugs. It may be an open question whether the granting of monopoly to the inventors or makers of materia medica products is of more harm or benefit to humanity. But that question is purely academic. The complete suppression of monopoly is not feasible at this time, although I hope that the members of our own profession will continue to adhere to the traditional ethics, whose existence has been more than justified by their results. As concerns manufacturers, the real problem is the regulation of monopoly, so that the public may benefit to the maximum degree by its desirable features — the encouragement of invention and progress; and so as to reduce to a minimum the undesirable features — the undue prolongation or extension of monopoly which discourages invention and progress, and the excessive financial profits and risks which spoil perspective and thereby hinder judgment. What is the proper solution, I for one am not prepared to say, and I am looking to the symposium on this subject for enlightenment. It is, perhaps, easier to judge which ways do *not* lead to a solution, and our Association may at least do good by exerting its influence to close these false passages.

There seems to be a fog over the whole subject, and it is not unlikely that the clearing of this fog may suffice to show the right way. I have seen it stated that the real trouble with our laws is their abuse—that they are so involved in technicalities that the victory tends to go to the longest purse, and that many abuses are permitted to stand merely because no one feels sufficiently interested to risk the money needed to fight them to a finish. If this is true, our Association should realize the duty

* Chairman's Address before the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

imposed by its influence and resources, and undertake to fight the abuses to a finish, in the interest of the public. But it is essential to know, first of all, what the abuses really are.

Although the greater part of the program happens to be taken up with pharmacotherapy, the equally important field of physical therapeutics has not been entirely neglected. The Section has to thank certain members of the American Roentgen Ray Society, and especially Dr. Clarence Skinner, for the symposium on that subject.

The members of the Section will notice that the program is well filled, and the officers hope that there will be a free discussion of the papers. It will therefore be necessary to limit the speakers to their allotted time, and to expedite business in every way as much as possible.

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PRESENT STATUS OF THE LAWS RELATING TO PATENTS AND TRADE-MARKS *

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Some months ago the Council on Pharmacy and Chemistry appointed a committee to investigate and to report on the abuses connected with the patenting and trade-marking of medicines. This committee presented a preliminary report on the general subject of patents,[1] in which attention is directed to some of the complications that will be encountered in any attempt to equitably solve the patent and trade-mark problems as they present themselves at the present time. The committee has also submitted a second report,[2] discussing the reasons why the widely used names for some of the newer remedies should be recognized as being public property and not in any sense proprietary. These two reports are of necessity purely preliminary and as yet no attempt has been made to generalize or to offer specific suggestions other than that the problems involved are well deserving of careful consideration on the part of physicians who are at all interested in promoting the welfare of the nation.

It is generally recognized that there are two sides to all questions and there are perhaps few problems confronting us at the present time regarding which this truism is more applicable than this very question of patent and trade-mark legislation. Theoretically at least, patent laws are designed to advance our knowledge of the useful sciences and arts and thus to benefit the nation, and are based on the principle that, as a matter of equity, the people should not, even were it possible, appropriate the ideas of an individual without offering him in return some form of recognition for the benefits that may accrue from a practical application of his ideas.

That this principle was recognized as sound by the originators of our form of government is evidenced by the fact that the Constitution of the United States (Art. 1, Sec. 8) provides that "Congress shall have power . . . to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

In compliance with this provision of the Constitution the federal Congress enacted a patent law in 1790, and the first patent, which happens to have been for a process for making a chemical substance, potassium carbonate, was signed by George Washington, then President of the United States, on July 31 of the same year. The original law was amplified in 1836, somewhat revised in 1870 and consolidated with the revised statutes in 1874, since when it has been in operation substantially unchanged. The trade-mark law now in force is essentially that of 1905, though amended in 1907 and again in 1909. The existing copyright law was approved March 4, 1909, and includes provisions for registering prints and labels.

In compliance with the requirement of the federal Constitution that the exclusive right to writings and discoveries be secured to authors and inventors for limited times, Congress has provided that a patentee, his heirs or assigns, shall have the exclusive right to make, use or vend the discovery throughout the United States and the territories thereof for a term of seventeen years.

The trade-mark laws of the United States provide that a certificate of registration shall remain in force twenty years from its date, except that, in case a trade-mark be previously registered in a foreign country, such certificate shall cease to be in force on the day on which the trade-mark ceases to be protected in such foreign country, and shall in no case remain in force more than twenty years, unless renewed.

The law respecting copyright provides that any person entitled thereto, shall have the exclusive control of such right, which shall endure for twenty-eight years from the date of first publication and may be renewed for a further term of twenty-eight years.

During recent years there have been numerous suggestions looking to more or less radical changes in our patent laws and much has been written by inventors, patent attorneys and others who should at least be well informed on the subject, regarding the why of the proposed changes. That there is little or no unanimity in regard to the course to be pursued is evidenced by the differences of opinion that have recently been elicited in hearings before the committee on patents of the House of Representatives on H. R. 23417, "A bill to codify, revise and amend the laws relating to patents," and by the committee reports and articles published in the journals of the American Chemical Society.[3]

A careful perusal of the comments that have been made in print and otherwise suggests that many if not all of the contributors to the discussion appear to be in favor of retaining the essential features of the present laws unchanged. It has been asserted that our patent laws, although not perfect, are generally considered to be models of good patent legislation and that they have been followed more or less extensively in compiling the laws and practices of foreign countries.

It is generally acknowledged that our American laws were conceived in a broad and fair spirit and that they essentially involve a contract between the nation and an individual providing on the one hand that the author or inventor disclose the progress that he has made and thus enable others to get acquainted with his work and to improve thereon, while the nation, on the other hand, assumes to assure to the individual, for a period of years, the absolute control of his publication or the sole use of his invention, thus virtually securing to the inventor a monopoly on the article or articles involved. Recent court decisions, notably the one in the now famous A. B. Dick Co. case, clearly establish the right of the

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. THE JOURNAL A. M. A., Sept. 2, 1911, p. 780.
2. THE JOURNAL A. M. A., April 27, 1912, p. 1208.
3. Jour. Ind. Eng. Chem., 1912, iv, 318.

owner of a patent to dispose of his product in any way that he may see fit. Along this same line the point has also been made that nobody is compelled to buy a patented product and that the public at large is at liberty to confine its purchases to unpatented products if it so chooses.

In connection with medicine and medicines this one feature of our patent laws constitutes one of the gravest dangers so far as the possibilities of abuse are concerned. The establishing of a monopoly permits an excessive profit and this extra profit is a natural inducement to the manufacturer or dealer to encourage the use of the article irrespective of whether such use is beneficial or harmful. This latter fact has been all too well established and it is generally recognized that many of the more or less potent remedies, particularly hypnotics and sedatives, that have been introduced in this country under the protection of patent and trade-mark laws, have in reality proved to be factors for harm and the all too liberal use or the abuse of these remedies has been the direct or indirect cause of many premature deaths.

The recent discussions on the desired changes in our patent laws appear to suggest the desirability, if not the imperative need, for a radical change in the now existing legal machinery required to establish the validity of a patent. At the present time patent cases may be decided in any one of the nine Circuit Courts of Appeal and each court can give a final decision in a patent case but only so far as that particular circuit is concerned. Being independent of each of the other circuit courts its decision need not necessarily be recognized by all or any one of the remaining eight circuit courts and it has been pointed out that an infringer who has been beaten in one circuit can carry on his infringement in the adjacent circuit and drag on new suits forever and a day and thus postpone final decision as long as he is willing to pay for the necessary legal talent and keep the case in court.

In the hearings before the Committee on Patents of the House of Representatives referred to above some of the ablest patent attorneys of the country have acknowledged the shortcomings of our present system and have endorsed the frequently made suggestion to establish a court of patent appeals having jurisdiction for all parts of the country, which with common-sense rules of practice would furnish a ready means by which both the inventor and the public could find out whether a patent is valid or not. Another reform that has been suggested is a system of preliminary publication of the patent before the final award so that persons directly interested could file their objections, much in the same way as is now done in connection with the issuing of trade-mark patents. In passing it might be noted that the one feature of the proposed changes in our patent laws to which strenuous objection has been made by manufacturers is the provision requiring that a patented article be manufactured or a patented process carried on in this country within a reasonable period of time, or in lieu thereof that the owner of the patent extend a license to any person demanding it. Essentially the same feature is included in the patent laws of Great Britain, Germany and Holland, and appears to be applicable in practice though it may at times work a hardship on an inventor who is unable to finance and exploit his invention satisfactorily.

Our present-day interpretation of the protection that is accorded by our American laws relating to trade-marks has been characterized as particularly vicious in that it tends to restrict competition and to foster a species of perpetual monopoly in the manufacture and sale of articles that are usually of such a nature that they are considered necessities by the average man.

One of the most objectionable abuses in connection with trade-marks is due to the fact that the so-called trade-mark, usually an arbitrarily selected name, is not used, as the law intends a mark to be used, to indicate the origin or manufacturer of an article, but is in reality used as a generic title for the thing itself and as such would not be recognized in court on any ground but that of unfair competition. For instance any one of the many trade names for hexamethylenamin could be used by a physician as a synonym for the official title either by stating the fact or by appending U. S. P. or other designation, but it could not be construed as a synonym by the pharmacist in dispensing the article unless the physician clearly indicates that he is willing to have any make of hexamethylenamin dispensed when ordered by one of the trade-name synonyms. This particular feature of trade-mark abuse is well worth careful consideration on the part of physicians who have been misled and are being misled into believing that an article is distinctive or original when it in reality is but a simple mixture of well-known substances or a previously used article rejuvenated by applying to it a new name registered as a trade-mark. Such a name has few or none of the elements of a trade-mark and in accordance with established precedent would have no standing in court unless it were clearly shown that its use by others was evidently with fraudulent intent.

A more exhaustive discussion of this particular phase of the subject would require more time than can be devoted to it in a review of this kind and for the present I will content myself by briefly recapitulating the essential features of the present day status and needs of the patent laws as they occur to me.

The granting of patents, even the granting of patents on medicinal chemicals, is sound in principle and should be of benefit, directly as well as indirectly, to the nation.

For the protection of the inventor no less than for safeguarding the inherent rights of the public it would appear desirable to simplify the present legal procedure necessary to establish the validity of a patent and also to extend to patents generally the system of preliminary publication now used in connection with the registration of trade-marks.

So far as patents on medicinal chemicals may be concerned there appears to be a distinct need for sane conservatism in regard to the use of new remedies and physicians should endeavor to discourage the promiscuous use of potent new drugs by the laity, thus safeguarding the health as well as the lives of their patients.

The legal status of so-called trade-marks that are in reality but generic titles for well-known substances, or simple mixtures of such substances, should be clearly established by instituting a test case either in court of law or by applying to the Commissioner of Patents for the cancellation of the trade-mark registration on some one of the many articles now in use.

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An Ideal Portrait of the General Practitioner.—The ideal practitioner is he who, about to deal with man, has appreciated the meaning of man and has fitted himself to meet the varied problems man presents; . . . who lives clean and acts the golden rule, and who leaves in a grateful memory and an untarnished name his *monumentum aere perennius*. —Meara in *Boston Med. and Surg. Jour.*

THE RELATION OF THE PATENT AND TRADE-MARK LAWS TO MATERIA MEDICA NOMENCLATURE *

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Manufacturers of materia medica products engaged in the introduction of new products to commerce by advertising are subjected to an enormous expense which, in order to make the investment of capital remunerative, must be met by profit on sales. At the present time it costs no less than from fifty to a hundred thousand dollars in advertising before a new product can return a sufficient margin of profit to pay reasonable interest on the investment. Every new product introduced means an enormous outlay and a tremendous risk to the manufacturer. As this advertising is exclusively confined to the medical press, it means an enormous donation to the medical journals of the country.

Under such circumstances, it is not surprising that the manufacturing houses and medical press favor the continuance of materia medica monopoly, although this is contrary to the principles of fraternalism distinguishing the medical profession from the times of Hippocrates.

If the system of monopoly of materia medica products is to be continued, it becomes necessary for the medical and pharmaceutic professions and the public to consider the subject seriously, for at the present time the patent and trade-mark laws are being misused for the purpose of protecting such monopolies. The subject is so complex in its various ramifications that books might be written without exhausting it, and I am therefore confining my remarks simply to the question of the relation of the patent and trade-mark laws to the materia medica nomenclature. By clearing up this phase of the subject, much might be accomplished in removing some of the serious objections applying to the present system.

The plan adopted by manufacturers of patented materia medica products is to patent them under their long chemical names and register as trade-marks short and catchy coined names, the object being to monopolize their sales for the seventeen years permitted by the patent law and, by controlling their currently used names, to continue the monopoly indefinitely after the patents expire.

Now, as the object of the patent law is to promote progress in science and the useful arts by granting to inventors, for limited times, exclusive use of their inventions and discoveries, in exchange for the publication of full knowledge thereof, whereby science may be promoted and the art of their manufacture advanced, it is self-evident that a scheme of perpetual monopoly is in direct opposition to the principle on which the patent law is based.

Furthermore, the control over the name of a product after the patent for the same expires is an abuse of the trade-mark law, for the function of a trade-mark is to distinguish between brands and thereby promote legitimate competition.

Proper standardization of materia medica products requires the adoption of a definite and changeless nomenclature compatible with the science to which the invention pertains, and the name should be as descriptive of the product as possible. When the descriptive name is long and unwieldy, a shorter name should be adopted for convenience. Such names should be free to all who have the right to make the product, and therefore, when the patent expires, should pass with the product to the public. This is good law as well as good sense, and has been so decided by the Supreme Court (in the Singer Sewing Machine case in 1895).

Yet the manufacturers, owing to necessity of longer-continued monopoly than the seventeen years permitted by the Patent Office are strongly opposed to relinquishing the control over the names of their products and are doing all in their power to circumnavigate the law. As each case must be fought out on its merits, a perpetual monopoly system has been established, which, as before said, defeats the objects both of the patent and trade-mark laws.

The remedy seems to be in the hands of the medical and pharmaceutic professions, as represented by the committee for revising the U. S. Pharmacopeia. If the Pharmacopeial Committee would issue an annual report giving a list of all the new products and supplying them with the names conformable with scientific nomenclature, the so-called trade names to be adopted as synonyms, this part of the problem could be solved.

Take as an example saccharin as listed by the house of Merck & Co. in "Merck's Index." The patent for benzoylsulphonic imid, or benzosulphinid, or anhydro-orthosulphaminebenzoic acid having expired, the name saccharin, although claimed as a trade-mark, has by the decision of the Supreme Court in the Singer Sewing Machine case, become public property. Merck & Co., recognizing this fact, listed the product in the index under the name saccharin and then added as synonyms the chemical names and all the trade names under which saccharin is known, as follows:

"Saccharin Merck—Refined.

"Benzoylsulphonic Imid; Garantose; Glusidum; Gluside; Glycophenol; Glycosin; Saccharinol; Saccharinose; Saccharol; Saxin; Sykose; Zuckerin; Glusimide; Agucarina; Toluolsüss; Anhydro-orthosulphaminebenzoic Acid; Benzosulphinid (U. S. P.); Neo-Saccharin."

What I have said refers to patented products. The question will be asked immediately: What are you going to do about unpatented products? If the medical profession would live up to its ethical obligations and refuse habitually to employ secret or semisecret medicines, this problem would not be difficult to answer, so far as medicine and pharmacy are concerned. For it is a well-known fact in law that any person has a perfect right to manufacture and sell an unpatented product and to offer it under its generic or descriptive name, all claims of the so-called proprietary medicine houses to the contrary notwithstanding. If the Council on Pharmacy and Chemistry or the Committee for Revising the Pharmacopeia would publish processes for making unpatented products, and adopt correct nomenclature for them, publishing as synonyms the so-called trade names, the problem would be solved.

In this connection, the following statement made in 1890 by the members of the House Committee on Patents, Hon. Benjamin Butterworth, chairman, is of interest:

1. The registration of an alleged trade-mark does not make it valid. Registration is merely to give notice that the thing registered is claimed as a trade-mark. The validity of the claim can only be settled by the courts.

2. The use of a trade-mark in no wise restricts the free use by others of the article of merchandise to which it is affixed. It confers on the user no privilege to the exclusive use of an invention of the kind conferred by the patent law, otherwise

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

we should have the anomaly of laws diametrically opposing one another. The patent law grants the inventor the exclusive use of his invention for a limited time, and then only on the publication of exact knowledge of the invention (accompanying his application for patent) whereby the public may manufacture it when the patent expires. The use of a trade-mark, on the contrary, is unlimited in duration, and no publication of the invention is required when it is used on the same.

3. The public has a perfect right to manufacture and sell any article of commerce not patented, and to do so under its proper or generic name, whether a trade-mark is used in connection with the article or not. For this reason the courts hold that names describing the articles cannot be used as trade-marks on the articles they describe. Otherwise the use of trade-marks would be a hindrance to competition, while the proper use of trade-marks promotes competition by distinguishing between one brand of an article and another brand of the same article, thus stimulating manufacturers to improvement in processes and methods of manufacture for the purpose of excelling each other in producing a better quality of the same articles or at a lower price.

4. While not constituting itself an interpreter of law, the House Committee on Patents, as individuals, does not hesitate to affirm the position above described, and so instruct the associated press reporter present.

The following quotation from Browne on trade-marks is pertinent under the circumstances:

The policy that the mere use of a name to designate an article would give to those employing it the exclusive right to designate such article by such name, would be giving a copyright of the most odious kind, without reference to the utility of the application or the length of the title, and one that would be perpetual. Neither the trade-mark law, nor the copyright law, nor the patent law, affords any such right, or under the pretense of the same, allows any one to throttle trade under the alleged sanction of law.

The following quotation from the decision of the Supreme Court in the Singer Sewing Machine case, is also of interest:

The result, then, of the American, the English and the French doctrine universally upheld is this, that where, during the life of a monopoly created by a patent, a name, whether it be arbitrary or be that of the inventor, has become, by his consent, either express or tacit, the identifying and generic name of the thing patented, this name passes to the public with the cessation of the monopoly which the patent created. Where another avails himself of this public dedication to make the machine and use the generic designation, he can do so in all forms, with the fullest liberty, by affixing such names to the machines, by referring to it in advertisements and by other means, subject, however, to the condition that the name must be so used as not to deprive others of their rights or to deceive the public, and therefore that the name must be accompanied with such indications that the thing manufactured is the work of the one making it, as will unmistakably inform the public of that fact.

In this connection, the argument of the appellant in the case of Clinton E. Worden & Co. *vs.* California Fig Syrup Company in the Supreme Court of the United States, October Term, 1901, is of importance as showing to what extent the courts have supported the statement made in this paper that descriptive names cannot be trade-marks. The following is quoted from the argument referred to:

The words "syrup of figs" or "fig syrup," as applied to the medicine in question, are either descriptive or deceptive, and in neither event can they be appropriated as a trade-mark.

Section 991 of the Civil Code of California regulates the adoption of words and symbols as trade-marks, and provides that no words can be adopted as a valid trade-mark "which relate only to the name, quality or description of the thing or business or place where the thing is produced or the business is carried on." This is merely the common-law rule as to trade-marks, and finds support in Choynski *vs.* Cohen, 39 Cal. 501; Burke *vs.* Cassin, 45 Cal. 467, and Schmidt *vs.* Brieg, 100 Cal. 673.

The leading case in this court is Canal Co. *vs.* Clark, 13 Wall. 311, where the rule is stated as follows:

"Nor can a general name or a name merely descriptive of an article of trade, of its qualities, ingredients, or characteristics be employed as a trade-mark and the exclusive use of it entitled to protection."

As illustrating the extent to which this rule has been carried, it will be interesting to note the subjoining list of words which have been held descriptive:

Iron Bitters, Brown *vs.* Meyer, 139 U. S. 540.
Sarsaparilla and Iron, Schmidt *vs.* Brieg, 100 Cal. 673.
Aromatic Schiedam Schnaps, Burke *vs.* Cassin, 45 Cal. 467.
Desiccated Codfish, Town *vs.* Stetson, 5 Abb. Pr. (N. S.) 218.
Antiquarian Book Store, Choynski *vs.* Cohen, 39 Cal. 501.
Ferro-Phosphorated Elixir of Calisaya Bark, Caswell *vs.* Davis, 58 N. Y. 223.
Cherry Pectoral, Ayer *vs.* Rushton, Codd. Dig. 229.
Tasteless Drugs, in re Dick & Co., 9 O. G. 538.
Burgess' Essence of Anchovies, Burgess *vs.* Burgess, 3 De G. M. & G. 896.
Balm of a Thousand Flowers, Fetridge *vs.* Wells, 4 Abb. Pr. 144.
Club-House Gin, Corwin *vs.* Daly, 7 Bos. 222.
Extract of Night-Blooming Cereus, Phalon *vs.* Wright, 5 Phila. 464.
Liebig's Extract of Meat, Meat Co. *vs.* Hanbury, 17 L. T. N. S. 298.
Bees-Wax Oil, in re Hathaway, Com. Dec. '71, p. 97.
Invisible Face Powder, in re Palmer, Com. Dec. '71, p. 289.
Razor Steel, in re Roberts, Com. Dec. '71, p. 100.
Mammoth Wardrobe, Gray *vs.* Koch, 2 Mich. N. P. 119.
Parson's Purgative Pills, in re Johnson Co., 2 O. G. 315.
Crack-Proof India Rubber, in re Goodyear Rubber Co., 11 O. G. 1062.
Croup Tincture, in re Roach, 10 O. G. 333.
Cough Remedy, Gilman *vs.* Hunnewell, 122 Mass. 139.
Iron Stone Water Pipes, in re Rader & Co., 13 O. G. 596.
Nourishing Stout, Raggett *vs.* Findlater, L. R. 17 Eq. 29.
Angostura Bitters, Siegert *vs.* Findlater, 7 Ch. Div. 801.
Julienne Soup, Godillot *vs.* Hazard, 49 How. Pr. 5.
Paraffine Oil, Young *vs.* Macrae, 9 Jur. N. S. 322.
Lackawanna Coal, Canal Co. *vs.* Clark, 13 Wall 311.
American Sardines, in re Sardine Co., 2 O. G. 495.
Straight Cut, Ginter *vs.* Kinney T. Co., 12 Fed. R. 782.
Homeopathic Specifics, Medicine Co. *vs.* Wenz, 14 Fed. R. 250.
Cramp Cure, L. H. Harris *vs.* Stucky, 46 Fed. R. 624.

An application of this doctrine to the facts in hand will show that the words "syrup of figs" and "fig syrup" cannot lawfully be appropriated as a trade-mark.

"The name of a secret preparation may be used by anyone for goods actually prepared according to the recipe, for they are the goods indicated by the name, whether prepared by the original inventor of the recipe or his successors in business or not. Until the secret is discovered or betrayed the goods of the original inventor or his successors can be the only goods to which the name is applicable, or which are denoted by it; but when other people can make them, the difficult question of fact arises, whether the name is merely that of the goods themselves, or that of the goods of the kind prepared or sold by the original inventor or his successors in business. This was well put by Fry, J., in the Angostura Bitters Case.[1] 'I cannot say,' the learned judge said, 'that Meinhard may not, if he can, make a bitter identical with the plaintiffs', and if he does, I cannot prevent him from selling it as Angostura Bitters.' It is to be observed that the person who produces a new article and is the sole maker of it has the greatest difficulty (if it is not an impossibility) in claiming the name of that article as his own, because until somebody else produces the same article, there is nothing to distinguish it from. No distinction can arise from using the name of the class, so long as the class consists of only one species, for then the name of the species and the name of the class will be the same."[2]

"There must be some word or sign, or device other than a generic name and words of descriptive quality."[3]

"So the words, 'Night Blooming Cereus,' were held to be invalid as a mark, being the proper descriptive appellation of the article."[4]

The same rule defeated the adoption of the words, "Desiccated Codfish."[5]

1. Siegert *vs.* Findlater, 7 C. D., p. 813.
2. Kerly, D. M.: The Law of Trade-Marks, Sweet and Maxwell, 1894.
3. Commissioner's decision, 1881, p. 97.
4. Phalon *vs.* Wright, 5 Phila. 464.
5. Harris, Beebe & Co.

In the case of the "Balm of a Thousand Flowers," Judge Duer of New York, says:

"It is only the seductive name that they claim as their exclusive property, and doubtless from the experience in its value in the extension of their sales, this, however, is a species of property which in my opinion is unknown to the law, and that can only be given to one by an infringement of the rights of all. . . . It has been repeatedly held that a trade-mark cannot be obtained in a name where it is the proper name for the article as in the case of Schnapps, the subject of the controversy in Wolf *vs.* Goulard, or where it has by general use become the proper name of an article which all manufacturers may use as in the case of Dr. Johnson's Yellow Ointment, Godfrey's Cordial, and Essence of Anchovies."

"Neither the trade-mark law, nor the copyright law, nor the patent law affords any such right, or, under the pretense of the same, allows anyone to throttle trade under the alleged sanction of law."

"No one can claim protection for the exclusive use of trade-marks or trade names which would practically give him a monopoly in the sale of any goods other than those produced or made by himself. If he could, the public would be injured rather than protected, for competition would be destroyed. Nor can a generic name or a name merely descriptive of an article of trade, of its qualities, ingredients, or characteristics, be employed as a trade-mark, and the exclusive use of it be entitled to protection."[6]

"We of course understand that when a name is coined by one who *uses it as a trade-mark* on a particular article, if that name is originally a lawful trade-mark, its subsequent adoption by the public as a common appellative cannot take away the right already acquired."[7]

But "When an article is made that was theretofore unknown, it must be christened with a name by which it can be recognized and dealt in, and the name thus given it becomes public property, and all who deal in the article have a right to designate it by the name by which alone it is recognizable."[8]

"A word which is the name of an article, or indicates its quality, cannot be so appropriated. Every one has the right to manufacture the same article, and to call it by its name or descriptive character."[9]

As stated in Circular No. 19, issued by the Librarian of Congress, "the copyright laws contain no provision under which protection can be obtained on a *mere name or title.* Entry cannot, therefore, be made in the copyright office for coined names; names of articles of manufacture; names of games or puzzles; names of substances; names of products, or names of medicines."

To sum up: Standardization of drugs is closely related to the present patent and trade-mark laws. The monopolies that depend for their existence on the protection of these laws, and the conditions that have been created by the large amounts of money which reach the medical press from the advertising of monopolized products, are serious impediments to the progress of standardization.

The first step in standardization is the selection of a name by which the drug is to be known and dealt in. For obvious reasons this name should be as descriptive as possible and in the case of a drug generally known by a trade name that name should be employed either as the generic name or a synonym. That there can be no legitimate objection to this plan is conclusively shown by the fact that the text-books are all adopting it; and in the quotations of legal opinions given herewith, the important fact is fully established that a trade name or brand name when used as the name of a product cannot be a trade-mark and should not be subject to monopoly.

6. Canal Co. *vs.* Clark, 13 Wall. 323.
7. Celluloid Co. *vs.* Cellointe Co., 32 Fed. Rep. 98.
8. Leclanche Battery Co. *vs.* Western Elec. Co., 23 Fed. Rep. 227.
9. Phalon *vs.* Wright, Am. Tr. Cas. 308.

I hope that the Section on Pharmacology and Therapeutics, working in cooperation with the Council on Pharmacy and Chemistry of the American Medical Association, will consider the subject and carry out the suggestion I have made for solving the problem of nomenclature relating to the newer materia medica in the manner above stated, namely, the suggestion that the pharmacopeial revision committee issue an annual list of new drugs giving proper names to them and including "trade" names as synonyms.

412 South Eighteenth Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. STEWART AND MR. WILBERT

DR. S. SOLIS COHEN, Philadelphia: I have listened to many discussions. That is about as far as we have gone. All that the medical profession has to do is to refuse to use those drugs which are not handled conformably to the ethical standards of the profession. We are not dealing with the ideal condition—"ought to be"—but with the practical condition—"is." I can only repeat my published views as to an acceptable compromise between idealism and hard fact. Let us recognize the ethical right of chemists to patent the processes of manufacture of therapeutic chemicals, but nothing further. The substance itself should not be the subject of a patent, the name should not be privately owned. Once it is introduced into medicine, drug and name must be the common property of the profession subject only to limited process patent. Further, we should try to establish an international body for the determination of pharmaceutic names for new substances and tender to manufacturers and importers in the United States this *quid pro quo:* that if they will consent merely to patent the process, as indeed is now the law in Germany, and not to demand a patent on the product, and will, further, adopt the name given by this international committee as a free name, not trade-marked, not registered, not protected in any other way than by the general laws of the country covering substitution, adulteration, fraud and the like—if they will do that, then, on our part, we will admit into our Pharmacopeia their products of which the process only is patented, if we deem the substance of sufficient worth and importance. That seems to me the only solution to this question. No matter what arguments may be made before congressional committees or elsewhere concerning the patent question in general, let us put the prevention of infringement and establishment of the validity of patents aside and confine ourselves to the one clear issue. Let us make a concerted effort to amend the laws of the United States on that point so that here as in Germany no chemist shall hereafter obtain a patent on any product intended for use in medicine or property right in the name of such a product. The process of manufacture may be patented; the substance and the name must be free to the world. That is the one step requiring legislation. The other step, which merely requires concerted action on the part of scientific bodies here and abroad—products of which the process only is patented and of which the name shall be that which is given by an international scientific body—may, when worthy, be admitted to Pharmacopeias.

DR. TORALD SOLLMANN, Cleveland: Dr. Cohen's suggestion to cure the whole evil by refraining from the use of these substances reminds me of a method proposed to reduce the high cost of food, that is, for all humanity to abstain from eating for a month. The practical suggestions are such as the Section should carefully consider, to determine the best line of attack. I think no one questions that if Dr. Cohen's proposition is a feasible one, it would solve the whole problem.

MR. M. I. WILBERT, Washington, D. C.: I would like to see a test-case under the present trade-mark law. If an association such as this would take such a case before the Commissioner of Patents or one of the circuit courts, any one of the names that are being used, ostensibly as trade-marks, but, in reality as generic titles, could be declared null and void and one case would settle all of them. I think that

the sooner such a thing is done the better it would be for American medicine, as it would compel manufacturers to use as they should, a genuine valid trade-mark to distinguish their products from other products of the same kind.

PROF. H. P. HYNSON, Baltimore: I think that Dr. Cohen's suggestion, that the medical profession be asked not to encourage something which they believe to be altogether wrong, is the most practical. I believe that the profession is generally opposed to the unethical handling of drugs, but they are not united in their action.

PROF. W. A. PUCKNER, Chicago: Three or four years ago I was present at a consultation of members of the Committee on Patents and Trade-Marks of the American Medical Association and legal authorities. It seemed the general impression at that time that it would be impossible to amend the patent law to prohibit product patents. Under our law, it was stated, it would be exceedingly difficult for the patentee to secure the rights granted in a process patent. Further, it was thought that it would be most difficult, if not impossible, to amend the law so that process patents only would be recognized.

DR. F. E. STEWART, Philadelphia: When I was chairman of the Committee on Legislation of the American Pharmaceutical Association, it was urged by the representatives of the German chemical houses that a law similar to the German process patent law could never be passed and enforced in this country, as it would be unconstitutional. In Germany the burden of proof is thrown on the person who infringes on a patent. "In this country," say the objectors, "every man is considered innocent until he is proved guilty, and it is impossible for a patentee to prove that his patent is being infringed unless the patent covers the product as well as the process. He has no right to send an inquisitor into the laboratory of his competitor to determine whether the process used by his competitor is an infringement or not." In the report of our committee we suggested that if the government should conclude to limit patents to processes only, the burden of proof might be thrown on those claiming to have invented new processes for producing the same products by compelling the inventors of alleged new processes to divulge them by applying for patents, so that the novelty in each case might be determined by the Patent Office. President Taft, in a recent message to Congress following the decision of the Supreme Court of the United States, handed down March 12, 1912, urged that the procedure under the patent laws be simplified and that the burden of proving the invalidity of a patent be placed on him who would infringe on it. It is not likely that the President, who is a very able constitutional lawyer, would make this request if such a law would be unconstitutional.

DR. S. SOLIS COHEN, Philadelphia: It might be well in presenting this question before the House of Delegates or Board of Trustees to request manufacturers and importers to act in cooperation with the American Medical Association concerning this necessary legislation. That at all events would separate the sheep from the goats and tell us who are reputable manufacturers desiring the advancement of medicine and pharmacy and who are merely despoilers of the sick.

[Several motions and amendments were made, the outcome of which was that the Section's delegate was instructed to lay the matter before the House of Delegates with the request that the House attempt to secure legislation forbidding patents on materia medica articles and permitting patents only on processes of manufacture. The House referred the matter to the Council on Health and Public Instruction.]

Factors in the Production of Abnormality.—The infections which arise in the first years of life and especially the inflammations of the gastro-intestinal tract, the result of unsuitable alimentation during the lactational period, are the most important factors in determining the majority of cerebropathies, and in this way a crowd of idiots, imbeciles and epileptics is produced who encumber asylums and are an enormous drain on the internal economy of the country.—Lugaro in "Modern Problems in Psychiatry."

THE INFLUENCE OF PATHOLOGIC CONDITIONS ON THE ACTION OF DRUGS*

GEORGE B. WALLACE, M.D.
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There is no doubt that much confusion has resulted in the past years from the attempt to transfer the results of pharmacologic experiments directly to the practice of therapeutics. The pharmacologist, by repeated experiments and careful analysis of his results, obtains facts and reaches conclusions which appear to be beyond contradiction. Yet when the clinician, applying the knowledge so acquired, arrives at results at variance to those of the pharmacologist, he is at a loss to understand the seeming discrepancy and very naturally views the laboratory work with some skepticism.

The main difficulty lies in the assumptions drawn from pharmacologic experiments. These as a rule are carried out on normal animals; the drugs are given usually in large dosage and in such a manner that they quickly reach the tissue to be acted on. If the exact conditions of the experiments are defined and if the work is carefully done, then the results obtained stand as facts which may be confidently expected in all experimental or clinical studies carried out under similar conditions. But, in clinical cases, the conditions are rarely those of the laboratory experiment. Often, it is true, a drug is employed in therapeutics for the purpose of acting on a function or tissue not in itself abnormal, and of affecting indirectly through this action the primary pathologic state, as, for example, purgatives in dropsy. In such instances the pharmacologic knowledge of the drug can be applied directly; the action differs in no wise from that seen in an experiment on a normal animal. But in many other cases, the action to be elicited is a direct one on the diseased tissue itself, and the conditions may vary considerably from those of the animal experiment. It is unlikely, even here, that the actions are different in kind from those in normal animals. They may differ markedly, however, in intensity and ultimate effect. Most of the vital organ functions are complex ones in that they involve a number of factors which normally work in harmonious equilibrium. In disease one may become predominant, another may cease to exert influence.

In the mechanism of diuresis, for instance, there are to be considered a permeable membrane, vessels capable of a certain degree of constriction and dilatation, a volume of blood of fairly definite concentration. A diuretic may affect any one of these factors with a common result and their relationship one to another remains but little changed. If a pathologic condition arises, however, for example, affecting the power of the vessels to dilate, the resulting effect of the diuretic—that is, diuresis—may be greatly increased over the normal, or may be entirely absent. And yet no new type or kind of action has occurred. The difference in the result means simply that one factor has responded more actively or less actively to the drug than is the case normally.

It is obvious then that the results of drug-action in normal animals are often incomplete so far as a direct therapeutic application is concerned and that they must be supplemented by experiments in which the conditions obtaining in disease are reproduced.

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* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

In studying these differences in action in pathologic conditions it is by no means necessary to rely wholly on animal experimentation. Many of the most important facts in therapeutics have been brought to light by accurate clinical observation. It is rare, however, that an ultimate analysis of these facts can be obtained at the bedside. The work of Cushny on the therapeutics of digitalis, which is an example of what may be accomplished clinically, was made possible chiefly by his thorough understanding of correlated laboratory experiments. Where it is possible to produce a pathologic condition such as exists clinically, then undoubtedly the study of drug effects becomes far more accurate, easy and rapid. But the final proof must eventually be obtained by clinical application.

It is out of the question here to cite more than a very few instances of the differences in drug action referred to. But these, I trust, will emphasize the importance of the subject. First, there may be considered such relatively simple phenomena as abnormal absorption and excretion.

It is well known that a dilated and atonic stomach, with greatly delayed emptying power, is of fairly common occurrence. Very few drugs are absorbed by the stomach and the time required for them to enter the circulation is dependent largely on the quickness with which they reach the intestine. A slow passage from the stomach to the intestinal absorbing surface not only delays the onset of action of a drug, but also lessens the intensity of action. For the dosage assigned to any drug presumes that it shall exist in the circulation in a definite concentration.

Again, it is a known clinical fact that in cases of ascites, especially that from liver cirrhosis, drugs such as diuretics may have little or no effect. Experiments performed many years ago have shown that the toxicity of certain drugs given by the stomach is greatly lessened if the abdominal cavity contains a large amount of fluid. When the fluid is withdrawn, the toxic action comes on quickly. The effect of the fluid is to prevent the drug being taken up by the circulation.

With regard to excretion, it has been shown that curare, a drug ordinarily producing no symptoms when given by the mouth because of its rapid elimination, may produce death if its passage of excretion, the kidney, is blocked. According to Meltzer and Lucas,[1] magnesium sulphate given subcutaneously to nephrectomized animals induces complete narcosis, although in the same dosage it is entirely without this action in normal animals. In this connection, a paper by Boos[2] reporting a number of cases of magnesium sulphate poisoning in man is of interest, since it is not improbable that impaired renal function was a factor in several of his cases.

Finally, some interesting work by McCrudden[3] on excretion may be mentioned. It is a wide-spread custom among the laity to treat snake bites by the internal administration of alcohol, or such intestinal irritants as senega. Alt has shown that the poisons from certain snakes are excreted in part, at least, by the gastro-intestinal tract. McCrudden, working with morphin, was able to show that the excretion of this drug by the intestine was greatly increased if intestinal irritants, such as rum, quillaja and senega, were given. Probably this effect on morphin excretion applies to all substances excreted by the intestine, and, if so, may be an explanation of the benefits derived from elaterium in uremia.

A pathologic decrease in the volume of blood may influence the action of drugs. Thus, experimentally, after a severe hemorrhage, a dose of strychnin which ordinarily would produce at most only a slight increase in reflex irritability may bring on typical convulsions. These disappear when the withdrawn blood is reinjected, so that the stronger effect is due to the greater concentration of the poison. It is quite possible that this experimental fact may at times be of practical importance. Wiggers[4] has shown that a number of drugs lose certain of their characteristic actions after hemorrhage. The vagus-center loses irritability, so that slowing of the heart no longer occurs after epinephrin or digitalis.

The difference in action of drugs on the central nervous system is generally only one of degree of effectiveness. Thus, it is well known that when certain types of pain exist, these may be relieved by doses of morphin too small to induce any effect in a normal individual. Similar effects are seen in the influence of morphin on cough. In these cases, the action consists in reducing the excessive irritability of a brain center to its normal level. The antipyretics lower a normal temperature only when given in dangerous dosage, whereas, when fever is present, a decided fall may be obtained by relatively small doses.

The most popular field at present for experimental work along these lines is the circulation. Pharmacology has done its full share in explaining the action of drugs on the normal circulation. Therapeutics, however, has advanced comparatively little. The action of strychnin, for example, has been worked out in great detail. Its effects in therapeutics are a matter of controversy among clinicians. In normal animals, strychnin fails to elevate the blood-pressure appreciably, unless given in doses which may be considered above the therapeutic limit. Experiments carried out in my laboratory, in which a pathologically low blood-pressure had been induced by such varying procedures as shock, hemorrhage, diphtheria toxin, nitrites and chloral, have shown that the drug is effective only in cases in which a low blood-pressure is brought about by a partial depression of the vasomotor center, such as may be produced experimentally by chloral. This is what might reasonably be anticipated, since the action of the drug consists in increasing the irritability of this center and so making it more responsive to outside stimulation. A careful study of the records of clinical cases improved by strychnin would undoubtedly show that these cases are ones in which a depressed vasomotor center was the operating factor.

With regard to the action of drugs which lower blood-pressure, it has been shown that their effect in abnormally high pressure is in general not especially different from that in the normal.[6] The action is somewhat later in coming on and is more prolonged, due probably to a slower absorption, but the percentage fall of blood-pressure is quite comparable to that in a normal animal. Cases have been reported in which no fall occurred after the nitrites, but as yet no explanation of this lack of effect has been given.

The difference in the result of drug action on the normal and on the diseased heart is quite striking. For example, in a normal animal, digitalis produces a distinct cardiac slowing, with an increase in both systole and diastole. In cardiac incompensation, with a normal

1. Meltzer and Lucas: Jour. Exper. Med., 1907, ix, 298.
2. Boos: Magnesium Poisoning; A Study of Ten Cases, THE JOURNAL A. M. A., Dec. 10, 1910, p. 2037.
3. McCrudden: Arch. f. exper. Path. u. Pharmakol., 1910, lx, 11, 374.
4. Wiggers: Jour. Pharm. and Exper. Therap., 1911, ii, 395.
6. Wallace and Ringer: THE JOURNAL A. M. A., Nov. 13, 1909.

rhythm, Cushny[7] found a slowing in only 30 per cent. of the cases studied by him. Apparently, the vagus-center has either lost its irritability or else no longer exerts a controlling effect on the heart-rate. It is well known that fever lessens the response of the vagus-center to drug stimulation, and, as has been mentioned, anemia of the center by hemorrhage and probably by insufficient circulation through cardiac weakness has a similar effect. In arhythmias present in animals, digitalis often completely restores the rhythm to its normal sequence. In arhythmias in man from auricular fibrillation, it also brings about improvement, and here a typical slowing almost invariably occurs.

Experimental evidence shows, further, that the strengthening effect of digitalis on the contractions of a weakened heart is much more marked than on a normal heart. Similarly, camphor, which has an uncertain effect on a normal heart, acts as a strong stimulant to one weakened by chloral. Again, the increase in diastole occurring in a normal heart from digitalis gives place to a lessened diastole in a dilated heart.

Finally, the rise in blood-pressure seen in normal animals after digitalis may be replaced by a fall in cases of cardiac incompensation.[8] The explanation given for this unexpected result is that with a deficient circulation a condition of asphyxia occurs which induces a strong vascular constriction. With improvement of circulation, the asphyxia lessens and the vessels accordingly dilate.

A considerable amount of work has been done lately to determine the effect of pathologic states of the kidney on the efficiency of diuretics. In normal animals a diuresis can practically always be obtained from the administration of one of the caffein group or of sodium chlorid. It occurs to a slight effect, or not at all, from digitalis. In many cases of nephritis, all of these drugs produce a diuresis of much greater degree than occurs in normal animals. In other cases, however, no diuresis at all follows. Here is a seeming contradiction between a pharmacologic experiment and clinical experience which without further knowledge is difficult of interpretation. An analysis of the pharmacologic action of diuretics has shown that accompanying diuresis there is a quite evident enlargement of the kidney-volume due to a dilatation of its vessels, and the conclusion has been drawn, for the caffein group at least, that the vascular dilatation is responsible for the diuresis.

Experimentally, two types of nephritis may be induced: one a glomerular type, which may be induced by cantharides, in which the vessels are involved to such an extent that they have lost the power of further dilatation; the other a tubular type, caused by such irritants as chromates and uranium, in which a vascular involvement becomes marked only in the later stages. In the glomerular nephritis, all of the commonly used diuretics, caffein, digitalis, sodium chlorid, are without effect in increasing the flow of urine.[9] In the later stages of tubular nephritis the same lack of effect occurs. One of the necessary factors in the diuresis, the capability for vascular dilatation, has been removed from the influence of drug action. In the early stages of tubular nephritis, on the other hand, all of the diuretics mentioned are effective. The vascular factor has become more active than normally, in that the vessels are hypersusceptible; a greater dilatation occurs than in a healthy kidney, and consequently a greater diuresis results.

7. Cushny: Am. Jour. Med. Sc., 1911, cxli, 469.
8. Meyer and Gottlieb: Experimentelle Pharmakologie, Ed. 2, 1911, p. 270.
9. Hedinger: Deutsch. Arch. f. klin. Med., 1910, c, 305.

One more example may be given. In a non-pregnant cat, epinephrin produces an inhibitory effect on uterine movement. Given to a pregnant animal, epinephrin, instead of inhibiting uterine movement, promotes strong contraction.[10] Apparently, the difference depends on an altered condition of the uterine muscle which renders it more susceptible to the motor and less to the inhibitory impulses coming through the sympathetic nerves.

I have given only a few examples of the effects of pathologic conditions on drug action. The experimental field is a large and comparatively new one. It is a fitting corollary to the usual pharmacologic experimentation and is the one step needed to bring pharmacology and therapeutics into their proper relationshp.[11]

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ABSTRACT OF DISCUSSION

DR. S. SOLIS COHEN, Philadelphia: Many laboratory contributions, valuable as they are, which have been based on experiments with normal animals under normal or abnormal conditions, are inapplicable and even misleading at the bedside. Pharmacologic observations can be made scientifically at the bedside if not as well as in the laboratory, yet, within their limits, as precisely. For example, there is a fruitful series of researches which can be carried out without risk to the patient, in studying the effect of remedies on the blood-pressure in certain cases of infection, and especially in pneumonia. Since Gibson called attention to the prognostic and therapeutic importance of the ratio between blood-pressure and pulse frequency in pneumonia, I have been using various pressor agents in the treatment of cases of pneumonia, and many interesting differences in their action from that attributed to them on the basis of pharmacologic experiment can be made out. Not only that, but the difference in different patients is sometimes quite marked; also the differences in the same patient at different stages of the pathologic processes and moreover, according to the other treatment that is used at the same time. Here again is another great field of clinical research: the association of remedies—the modification of drug influence not alone by disease, but by other therapeutic measures instituted before or after or in conjunction with the drug under study. I have, for example, found the intramuscular injection of quinin and urea hydrochlorid most useful in acute lobar pneumonia. The fall of temperature it produces is sometimes accompanied with a very marked fall in blood-pressure; but this can be averted and the blood-pressure made to rise far beyond the level which it occupied before it was disturbed by the use of coincident injections of cocain hydrochlorid. Here, too, is another modification of the action of a drug by disease. I have given by injection—and it has been absorbed—as much as 150 grains (10 gm.) of quinin and urea hydrochlorid in twenty-four hours, to a pneumonia patient without producing the slightest symptom of cinchonism, without tinnitus or deafness, without amaurosis, without any irritation of the retina as verified by the ophthalmoscope—in a word, without one symptom of quinin intoxication. It is quite evident that the condition of the patient has modified very considerably the action of that drug. I think it is a chemical neutralization, but the subject is still *sub judice*. Now the same condition which modifies the action of quinin in pneumonia—or some other condition—modifies likewise the action of digitalis; because if any drug is disappointing as used by the ordinary method in pneumonia it is digitalis

DR. OLIVER T. OSBORNE, New Haven, Conn.: Physicians for a long while have ridiculed laboratory investigations because such investigations did not meet clinical conditions. On the other hand, the laboratory men ridicule a great many treatments used empirically because they do not follow the pharmacologic findings. Each should respect the other's work; the more we understand each other the better we shall understand

10. Cushny: Jour. Physiol., 1906, xxxv, 1.
11. An extensive bibliography on this subject is given by Salant, circular No. 81, U. S. Dept. of Agriculture, Bureau of Chemistry

the true actions of drugs in disease. As a general working rule it is a pretty bad plan to give to a patient, who is in a serious condition, an amount of any drug, which we know to be active, and which ordinarily would be considered semitoxic, if not actually toxic. In a recent discussion at another meeting there was a question of what would revive a man under certain conditions of spinal anesthesia. Previous to the spinal anesthesia there was a morphin and scopolamin injection given, and I objected to the conclusions as to the action of the drugs used for the revival of the patients as it would be hard to tell just what they were combating. A surgeon held that it did not make any difference if we gave a toxic dose so long as the man revived, because he was dying any way. My answer was that the medical men like to know of what the man died; the surgical men do not care.

DR. EGBERT LEFEVRE, New York: I think it may be said that a change has taken place in the point of view of both the clinicians and the pharmacologists in regard to the explanation of drug action. Clinicians, before the advent of pharmacology, accepted any explanation of drug action that had sufficient authority back of it. With the introduction of pharmacology, many of the accepted explanations of drug actions did not square with the laboratory experiments, and clinicians found that it was difficult, if not impossible, to apply to the treatment of patients the data gained by animal experimentation. This at first aroused antagonism between the clinician and the pharmacologist. As Dr. Wallace has said, the pharmacologist is chiefly concerned with the action of drugs on normal physiologic processes. I think that we have been asking of the pharmacologist a great deal more than we have a right to ask. Clinicians are chiefly concerned with the pathologic physiology and the action of drugs on the altered physiology. Dr. Wallace has shown how this pathologic physiology disturbs certain drug action, and it emphasizes the necessity for the clinician studying the perverted physiologic processes in his patients and then apply the knowledge gained in the pharmacologic laboratory to correcting these disturbed processes. Our attention has been centered too much on the pathologic changes in organs as a result of disease, rather than in the changes that have occurred in the physiologic processes, and our therapeutics have suffered accordingly.

DR. HORATIO C. WOOD, JR., Philadelphia: The clinician should bear in mind that pharmacologists alone cannot answer their questions as to what drugs will do in diseased condition. It is rare indeed that a pharmacologist has an opportunity like that which Dr. Cushny had of studying the action of digitalis in diseased conditions of the heart. The ordinary pharmacologist has little or no clinical material at his command. If clinicians wish to improve their drug therapeutics, they must work out their own salvation. The pharmacologist, of course, can give them suggestions, can give them advice and start them on the way, but, after all, the testing of these problems must rest in the hands of the clinician and one reason I believe that more advance has not been made by the body of clinicians is their carelessness in observation and in recording. Just recently I read a paper on the value of various methods of treating high arterial tension in which there were long records of the results of various drugs and various physical measures in cases of high arterial tension. The reporter in no single instance mentioned the cause of the high arterial tension, nor did he mention the doses in which he employed his drug, and while the paper was suggestive, it was very much injured by what every scientific investigator recognizes as fundamental principles in reporting his experiment. Clinicians who have an opportunity of making these studies should report them and report them accurately with the necessary details so that we can draw the necessary deductions.

DR. JOSEPH L. MILLER, Chicago: Every physician has felt for a long time that the pharmacologist must be able to apply pharmacology in the laboratory to animals in which the disease has been experimentally produced. I should differ somewhat from Dr. Wood in saying that the clinician must work out his own salvation. It seems to me that the only way is for the pharmacologist and clinician to come together and compare notes; not to have the pharmacologist in the laboratory working only with diseased animals, but both the pharmacologist and clinician at the bedside, the pharmacologist with special training on physiologic action of drugs and the clinician, on the other hand, with special training in the diagnosis and ordinary course that the disease takes; by combining these two types of knowledge I believe that we can really make some progress.

DR. WILLIAM SALANT, Washington, D. C.: The literature of this subject has been fully treated in a paper which I published recently in THE JOURNAL. It is taken for granted by the vast majority of pharmacologists that a drug will behave the same in health and in disease. The action of antipyretics and of cardiac stimulants shows that this is not the case. In experiments which I performed lately with caffein in pathologic conditions, as after removal of the kidneys, I found that, contrary to expectation, the toxic dose that would be tolerated under this condition—I studied it entirely on rabbits—is slightly greater after the removal of the kidney than it is in the normal animal. Furthermore, I found that if smaller doses are given at proper intervals, nephrectomized rabbits can stand about 30 per cent. more than they could if the dose was given at a single injection. Since one channel of elimination has been removed, when a sufficient amount to make up a toxic dose is given, that animal ought to succumb—but it did not. Similar experiments were performed by Dr. Meltzer and myself with strychnin. We injected into nephrectomized rabbits in divided doses three to four times the fatal amount without causing the death of the animal. I think that pharmacologists should devote a great deal more attention to this phase of pharmacologic action than has been done in the past. To my mind it is absolutely necessary before we try a drug on the human being that we should study its effect first on the normal animal, and then we should study its action on an animal in which the same condition has been induced as is intended for use in therapeutics.

DR. THOMAS F. REILLY, New York: A fact sometimes overlooked is that we jump from normal animals to diseased human beings. As long as the treatment of symptoms is all that we can expect from drugs, we must use experimentation, first, on normal animals to find the danger limit and results, and then on healthy human beings who are paid or who volunteer for such purpose. When we find that an agent produces effect on healthy human beings in the production of a pathophysiologic effect we may expect a similar effect in disease. The homeopaths give out their vials among their students and get reports, and really they are on the right basis as far as experimentation is concerned. If their reports are colored by imagination that is their fault. It would be better to try new remedies on normal human beings and then on patients.

CANDY MEDICATION *

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CHICAGO

Ancient medicine was nasty medicine; the medicine of the future will be pleasant. The dawn of the day of pleasant medication is already with us. May this contribution, like the song of chanticleer, usher in the sunrise of the new day!

The pill, the capsule and the cachet have fairly well solved the problem of administration of medicines to adults; but the child, for whom pleasant medication is especially necessary, is not helped by these means. When one witnesses the struggling of the average child against the average medicine, one cannot but wonder whether at times the struggle does not do more harm

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* From the Pharmacologic Laboratory of the College of Physicians and Surgeons of Chicago.

than the medicine can do good, and wish that we had other means of administering medicines to children. And many a petted child that has grown up into a sensitive woman who believes she cannot swallow a pill, cannot and will not take medicine. It so happens that just these are excessively fond of candy. Surely, if we could present to them our medicines in the form of perfect candy, it would solve one of the most difficult problems in the administration of medicine. Another use for candy medication is in the treatment of the insane, who frequently will not take medicine but may take it in candy form.

Attempts at candy medication have been numerous enough; but, with few exceptions, have thus far not been successful. The official representatives of medicated candy, the troches, are surely not very popular; and, with the exception of the troches of santonin, they are also surely not very pleasant. No candy medication can be successful that is not a perfect candy. Many times did it happen, in my researches on candy medication, that I had prepared what seemed to me a rather pleasant sort of candy. Friends tasting it would agree that it was not bad. But, when tried on a real child, it was a failure, simply because it had a slight degree of bitterness or of saltiness that would not be objected to by an adult or even by a healthy candy-hungry youngster. But the sick child is critical and suspicious. And it must be admitted that, when we administer medicine in candy form, we are practicing a species of fraud — pious fraud though it be.

Another reason for the failure of the troches is that they do not disintegrate rapidly enough, and a sick child will usually not suck candy as a well child would. The advantage of slow disintegration for throat medication is only then obtainable in those of sensitive palate when the lozenge is perfectly pleasant; such a pleasant lozenge is the slippery elm lozenge, which we have been using with success and pleasure as throat demulcent in cases of sore throat and of cough due to pharyngeal irritation. For all other purposes, candy medication to be successful must not only be perfectly pleasant but must also disintegrate rapidly in the mouth so as not to require sucking or chewing.

Several years ago, I took a course of instruction with a candy-maker, in the hope of finding in the confectioner's art some new form of pleasant administration for medicine. I made sulphur taffy and cod-liver oil chocolate creams; but these and a large number of other attempts were unsuccessful. I finally decided, as the result of these studies, that the candy form most suitable for purposes of medication was the "fondant." This, however, has the disadvantage of becoming hard with age. Free from this objection, and closely similar to the "fondant" is a rather lightly compressed tablet made of finely powdered cane-sugar. And so I came to choose the tablet form as the best and most convenient for candy medication — a form which has already been in successful use for some years for the administration of calomel and of phenolphthalein.

My search has been to devise a perfect candy form for as many different important medicaments as possible; and thus far I have succeeded with about twenty, not including the previously mentioned santonin troches and slippery elm lozenges, or the calomel candy tablets or those of phenolphthalein, all of which should, however, be counted as available candy medicines.

Nothing is easier than to produce a candy tablet from a tasteless substance given in very small doses. Thus it is easy to make candy tablets of calomel, of yellow iodid of mercury, of arsenic trioxid, of tartar emetic, of nitroglycerin, of elaterin, of scopolamin (hyoscin). For instance, should 100 tablets of a substance whose dose is to be 1/100 grain, each tablet to weigh 3 grains, be desired, the following formula may be used:

Active ingredient	1 grain
Cacao butter	9 grains
Powdered sugar	290 grains

Talcum, not to exceed 3 per cent., may be added to prevent sticking of the tablets to the punches. This addition is not necessary when the tablet contains a considerable amount of insoluble powder.

The ingredients are thoroughly triturated and are then compressed in the tablet machine. The 3 per cent. of cacao butter, as suggested by Schleimer[1] admirably serves the purpose of a cohesive agent for prescription quantities of tablets.

A few drops of solution of carmin, of tincture of curcuma, or of 1 per cent. malachite green may be added, if coloring be desired. The flavor should always be sprayed on the finished tablet by means of an atomizer; for, if the volatile oil be incorporated with the powder, it is liable to impart to the tablet a sharp or bitter taste.

Insoluble substances that are given in larger doses, such as bismuth subnitrate, chalk, magnesia or reduced iron, require at least twice the volume of sugar to keep the insolubility of the powder from being noticeable. In tasting tablets of reduced iron, persons who have gold teeth or metallic fillings in their mouth will notice a "metallic" taste due to the generation of an electric current by contact of dissimilar metals and the liberation of the products of electrolysis. As children's mouths are usually free from metal, the reduced-iron candy tablets are very readily taken by them. The saccharated iron carbonate will be found entirely unobjectionable even by those who have gold in their mouth.

Insoluble substances that have a slight taste, such as tannalbin, phenacetin, digitoxin, are best disguised by the addition of 10 per cent. of powdered cacao to the sugar. Chocolate tablets can usually be compressed without the necessity of adding cacao butter.

The most tasteless form of quinin I have been able to find is aristochin, which is considerably less bitter than euquinin. The slight bitterness of aristochin is almost entirely overcome by the addition of a small amount (2 or 3 per cent.) of sodium bicarbonate and of cacao and sugar in the proportion previously mentioned.

The only sufficiently tasteless salicylate I have been able to find is salophen, which is easily made pleasant by the mere addition of sugar, and, perhaps, better still by the further addition of cacao.

Of soluble substances very few are suitable for candy medication. Sodium bicarbonate, ½ grain to 4 grains of sugar, makes a fairly palatable tablet, especially if flavored with peppermint. Hexamethylenamin, which has a sweetish taste, can be made into a fairly pleasant chocolate tablet.

For the salines I have not been able to devise a perfect candy form. I have therefore selected sabromin and sajodin, which are the most tasteless representatives of bromids and of iodids, respectively, that I know of, and which are easily put up in the form of palatable tablets, especially by the use of cacao.

One objection that can be urged against candy tablets is that children might poison themselves by eating too many of them at one time. This is indeed a serious

1. Schleimer, A.: National Druggist, February 1909, p. 54.

objection, which can, however, easily be overcome by prescribing not more tablets than could be taken at one time without danger.

I believe that, in the candy tablet, Dr. Robert M. Fuller's invention has reached its highest utility. I even venture to hope that some day candy tablets may be official in the Pharmacopeia, perhaps instead of the troches. The main reason that has been urged against the admission of tablets to the Pharmacopeia was that tablets required complicated machinery and that different triturations require different kinds of treatment — that indeed the tablet machine needs an expert manipulator. While this is true, when a large variety of all possible substances that may enter tablets is contemplated, it is not true regarding candy tablets. I have shown how simple it is to make them; and now that such cheap and yet practical tablet machines, as the Whitall Tatum Co.'s and the Stokes Co.'s are on the market, the expense of the equipment ought not to be deterrent. With the aid of these machines, it does not take any more time or trouble to make prescription quantities of tablets than it takes to make as many pills or capsules; and any pharmacist is able to make them.

I feel that I have undoubtedly not nearly exhausted the list of medicaments for which perfect candy form is possible, and would be grateful for suggestions of other medicinal agents that might be put up in candy form. I also welcome frank criticism of the specimens[1] submitted.

Thanks are due to Dr. I. E. Kohn and Mr. George N. Hiskey for their help in this research.

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ABSTRACT OF DISCUSSION

DR. C. L. GRABER, Cleveland: I had a little trouble with my samples, of which I have eaten as many as I dare; I notice that they crush in my fingers when I try to handle them. The question would naturally arise as to whether they will stand placing in an ordinary pill-box or envelope for dispensing. Will they deteriorate rapidly when exposed to atmospheric conditions? Have any of these samples a tendency to run together in a warm room, say, in a temperature of 90 or 95 F.?

DR. F. E. STEWART, Philadelphia: One objection to candy medication was not brought out. When I was a small boy I was very fond of apple sauce. My father often wanted me to take a Dover's powder and used apple sauce to disguise it, consequently I lost my relish for apple sauce. Is not it taking an unfair advantage of the children to use candy as a disguise for medicines, so that they will lose one of the joys of life?

DR. THOMAS F. REILLY, New York: I believe that children associate a round tablet with medicine just as most people do. The success of phenolphthalein as a purgative from the drug-maker's standpoint, is due to the fact that they changed the shape. Phenolphthalein preparations are made in various forms. The tendency in the past has been to make the tablets too small; if they were made larger I think we could get more flavor in the tablet and less of the disagreeable medicament. For many years it has been the custom of homeopaths to carry with them a large number of sugar tablets and when at the patient's home to drop one or two drops of the medicament they intend using on the tablets. There is no question that the success of homeopathy is due to pleasant medication. The average American child, ruling the house as he does, will not take our medicine; the mother will say the child simply will not take the medicine; she reasons that it is better for the child to take the homeopathic medicine rather than take no medicine. This is the main reason for the success of the homeopath among children and women. The fact that the average American stomach of to-day will not stand medicine that could easily be taken a generation ago, has been the cause of a great deal of prejudice against medicine. The same thing is true of different races. It is impossible to give disagreeable medicine to the Frenchman, whereas you can give a horrible-tasting medicine to a German with none but the best results. In fact, many of them seem to think that unless the medicine is disagreeable there will be no effect. Many of us know that disagreeable medicine will not be taken by our patients and consequently the shelves are full of bottles from which the patient has taken one dose and that is the last of it.

DR. BERNARD FANTUS, Chicago: Regarding the imperfections of the specimens presented, I may say that they were made in a hurry and under somewhat unfavorable circumstances and with rather imperfect apparatus. I know that some of them are altogether too soft; but this is very easily remedied by merely compressing the tablets somewhat more forcibly. As to the shape, I think Dr. Reilly's suggestion is a very excellent one. As a matter of fact, I tried to get a rectangular punch for the little tablet machine at the College of Physicians and Surgeons and, finding some difficulty in obtaining one, chose the circular form. Other shapes would, however, be better than the ordinary tablet form. I see no reason, except the manufacturer's convenience, for the use of tablets for any other purpose than as candy medicaments. A pill or capsule that any druggist can make is as good as any tablet, except for the purpose of candy medication. I have enjoyed the use of candy medication in private practice to such an extent that I felt urged to present it to the members of the profession. I am known among some of my little patients as the "candy doctor" and this is certainly not to my disadvantage.

1. A collection of specimens may be obtained on request from Dr. Bernard Fantus, 719 Ashland Blvd., Chicago.

PRACTICAL APPLICATION OF THE ROENTGEN RAY TO THE MANAGEMENT OF MALIGNANT GROWTHS *

CLARENCE EDWARD SKINNER, M.D.
NEW HAVEN, CONN.

I shall not go into a technical exposition of this subject, but shall restrict myself to an endeavor to show the relation which the *x*-ray bears to the treatment of cancer, as indicated by our experience with it revised to date. The general practitioner and the surgeon should know what can be accomplished with this force in connection with their cancer cases; but it is, of course, not to be expected that they will apply it personally, hence the subject will be dealt with from a general educational standpoint only.

The first step to be taken in such a consideration of the subject should be to prove that the *x*-ray is capable of affording positively valuable aid in the treatment of this disease. Strange as it seems to those of us who have worked with the agent for a dozen years, there are still many, many practitioners of medicine and surgery who doubt that the *x*-ray is of value in the treatment of cancer. I shall therefore report briefly a case which demonstrates, in a striking manner, the curative powers which are claimed for it by the forty or fifty competent roentgenotherapeutists in the United States. I have used the term "competent" roentgenotherapeutists intentionally and advisedly. Much injustice has been done the *x*-ray in its relation to cancer therapy by the very frequently unsatisfactory results, the many times entire lack of results, and occasionally the positively evil results which have followed attempts at its use by those incompetent to apply it.

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

The following case was first reported by me to the electrotherapeutic section of the International Electric Congress at St. Louis, in September, 1904, and I have selected it for citation because of its conclusive character. The clinical diagnosis was made under auspices particularly well calculated to effect conviction. The clinical diagnosis was subsequently confirmed by repeated microscopic examinations. For ten months before she came under my care the patient was under treatment and observation by one whose statements are entitled to the profoundest respect, and he considered it a hopeless case. The progress of the case since has been under observation of this same character and the patient is well to-day, eight years after her last treatment.

History.—The patient was a school-teacher, aged 39, on whom hysterectomy and ovariotomy had been done in 1898, for what was supposed to be a fibroid tumor of the uterus; no microscopic examination was made. About two and one-half years after this operation she noticed a hard tumor in the lower abdominal wall in the region of the cicatrix. There was no pain and no discomfort but rapid growth. She consulted Dr. Maurice H. Richardson of Boston, who referred her to Dr. W. B. Coley of New York, for treatment by the erysipelas toxins. During the next ten months she was treated with the toxins which caused the growth to decrease in size during the earlier part of this period, but they then lost their power and at the end of this time, in January, 1902, when she was referred to me by Dr. C. A. Bevan of West Haven, the mass measured 10 inches from side to side at the level of the anterior superior spines of the ilia, 8 inches vertically in the median line, and about 5 inches anteroposteriorly in the median line. Microscopic examination of sections removed from the tumor while she was under Dr. Coley's care demonstrated it to be fibrosarcoma and the mass was rapidly increasing in size. The patient was losing flesh, markedly cachectic, very weak, and complained bitterly of pressure symptoms.

Treatment.—Roentgenization was begun Jan. 28, 1902, and during the next four months the patient received forty-six applications. Her general condition commenced to improve at once but the tumor itself had increased somewhat on the right side, but decreased slightly on the left side; on the whole, the tumor was slightly larger at this time than it had been when we started, and the only feature about the case that encouraged me to continue the treatment was the marked improvement in the general condition.

The patient then went to her home in Massachusetts for a short visit and when she returned a decrease of about 20 per cent. in the size of the tumor was noticed, which made it necessary for her to shorten her waist-bands and the fronts of her skirts to keep them from dragging on the ground.

From June 17 to September 3, a period of two and one-half months, she received thirty-one roentgenizations. Her general health continued to improve, the tumor steadily decreased in size, and at the end of this period she resumed school-teaching, which had been interrupted for about a year and a half.

Course.—To make a long story short, the whole treatment of this case extended over a total period of two years and three months, during which time she received 136 applications of the Roentgen ray, more than half of which were given during the first eight months. She received her last roentgenization May 20, 1904, at which time no trace of the tumor was discoverable, nor had it been, according to the testimony of her family physician, for several weeks previously. The fact of its disappearance at this time was confirmed by examination by Dr. C. A. Bevan of West Haven, Conn., and in July by Dr. W. B. Coley of New York, so that this patient has been entirely free from any evidence of recurrence for eight years.

The fact once established that the *x*-ray is capable of influencing malignant processes favorably, its relation to the treatment of cancer may be approached from two points of view, namely, that of malignant processes involving the skin only and of those involving more deeply located structures.

CUTANEOUS CANCER

In the vast majority of cases of malignant disease involving the skin only, the feeling among roentgenotherapeutists is practically unanimous that the method of election as regards treatment is roentgenization exclusively. Thousands of cases have been treated in this country and Europe and I now feel justified in stating that there are at least as few recurrences under this method as under any other; if recurrence does occur it usually yields readily to further roentgenization, which cannot be stated of other methods; the scarring is less than that following other methods and the cosmetic result in such scars as do occur is usually better; and the pain following the application of pastes is entirely eliminated, as is also the onus of surgical extirpation which is a bugbear in connection with many patients.

The foregoing does not apply to cancer of mucous membrane, however. While enough cancers of the tongue, for instance, have been cured by roentgenization to demonstrate that the *x*-ray is often also capable of influencing happily and positively malignant processes occurring in this situation, yet the method of election here still remains radical extirpation primarily, to be followed by roentgenization.

SUBCUTANEOUS CANCER

In more deeply located malignant processes—of which mammary carcinoma constitutes, perhaps, the most common type—the exact therapeutic place of roentgenization is still open to discussion. The subject may be considered under three heads: (1) the employment of the *x*-ray to the exclusion of the knife, (2) preoperative roentgenization, and (3) postoperative roentgenization.

Roentgenization Exclusively.—Although many cases of deeply located cancer, especially mammary carcinoma, have been made to disappear by this treatment and have not recurred after the lapse of many years, yet the contingent risks are such that most of us do not feel justified in advocating it except in carefully selected cases. To my mind the most important of these risks is the delay involved. By the time the *x*-ray may have demonstrated its inability to control the process in a given case, extension of the growth may have cost the patient his chances of being successfully operated on. Recent developments, however, give ground for the belief that there may be more to say in this connection in the future.

Preoperative Roentgenization.—This method is advocated by some roentgenotherapeutists for cases in which the malignant process has extended far enough to render complete extirpation impossible. By suppressing the peripheral extensions, the case may be transformed from an inoperable into an operable one. While this plan is not recommended by many, yet excellent results have been reported by trustworthy men and the method cannot be finally passed on at this time.

My preference as regards the handling of such cases is to extirpate as much as possible of the malignant tissue, primarily and immediately, and then to apply the *x*-ray at once, in the hope that it will take care of what has remained. My reasons for advocating this method rather than the preoperative application are as follows:

1. Vigorous *x*-radiation of a malignant growth will frequently produce more or less general toxemia and it does not seem logical to me to run the risk of provoking vital depression just before the patient is to undergo an operation.

2. Effective radiation of parts containing malignant tissue causes fibrous tissue to take the place of the malig-

nant tissue, and frequently results in such a fusion of tissues and obliteration of normal tissue distinctions and relations as seriously to embarrass the operator during the ablative procedure.

3. If the ray is capable of influencing happily the total original mass of such a growth it should surely be capable of producing a much greater beneficial influence after the mass has been materially reduced in size by partial extirpation.

4. Effectual preoperative radiation involves delaying extirpation for weeks, during which time the neoplasm is constantly threatening further extension. It seems to me distinctly inadvisable, to say the least, to subject the patient, by election, to such an ominous risk.

Postoperative Roentgenization.—Whatever their attitudes as regards the application of the before-mentioned methods of *x*-ray administration in cancer, I believe I am justified in saying that roentgenotherapeutists are universally agreed that the ray should invariably be thoroughly administered after every operation for cancer, and without waiting for recurrence to manifest itself. By thorough administration I mean a course of from twenty-five to thirty roentgenizations lasting from ten to twenty minutes each, this duration to be determined by the type of generating apparatus employed, the time interval between the applications, distance between anode of tube and surface of region to be treated, etc. The reasons for taking this radical position are as follows:

1. In my opinion, it is not justifiable, in a disease so difficult to manage as cancer, to omit the application of any measure which has demonstrated that it increases our power over the disease.

2. It is impossible to tell, at the time of operation, in which cases recurrence is going to take place; hence, in order to be sure that the cases which *will* need it will be treated, it is necessary to apply the measure in every case.

3. Early recurrences are frequently internal, hence undiscoverable until such organs and tissues have been involved as to render absolutely useless the application of any remedy at present known.

4. Many recurrences are more vicious and resistant to roentgenization than the original lesions.

These last two reasons explain why many cases are hopeless under roentgenization, though the patients might have been saved had the remedy been applied immediately after the operation, before internal metastasis had occurred, and while the malignant foci were microscopic in size.

5. When the *x*-ray has been thoroughly and skilfully applied immediately after the operation, it is known that everything has been done that offers the patient a chance of recovery, and if the case eventuates unhappily neither physician or patient, nor the patient's family or friends will have cause to reproach themselves for having left undone something which might have altered the outcome had it been applied at the proper moment.

Prominent among the objections which have been urged against prompt, routine, postoperative radiation by surgeons, general practitioners and patients, are the following:

1. Many patients will thereby be subjected to the treatment who would have no recurrence anyway; such patients would be treated unnecessarily.

This objection loses its force when we recall that the only way in which we can be sure of treating those cases in which recurrence will take place is by raying *every* case, even though this involves unnecessary treatment in some cases. Properly applied *x*-ray treatments do no harm, even if they are unnecessarily given. On the other hand, much harm, in many cases irreparable harm, follows delaying *x*-radiation until recurrence has manifested itself.

2. The expense involved in *x*-ray treatment is considerable, and it may seem unjustifiable to inflict it on a patient who has not demonstrated that he is going to need it.

The desirability of preventing recurrence is so great that the expense involved becomes a negligible factor. If recurrence takes place the original operation might just as well not have been performed at all. The money spent on any measure which offers a reasonable promise of diminishing the chances of recurrence, then, is as well spent as is that spent on the operation itself.

The answer to the first objection applies here also, viz., that by the time the patient has demonstrated that he is going to need the *x*-ray for recurrence, it will frequently be too late for the procedure to be of use to him, and the saving of his money will have been a profitless procedure.

SUMMARY

The subject, then, may be summarized as follows:

1. The *x*-ray has demonstrated that it is capable of exercising a powerfully curative influence over many cases of malignant disease, hence its routine addition to extirpative measures will increase the number of curable cancer cases.

2. It is impossible to tell beforehand which cases will need roentgenization and which will not, or which will respond happily and which will not; hence the only way to be sure of treating all cases that will need it and all that will respond is to treat all cases.

3. There is reason to believe that many postoperative recurrences are more resistant to the *x*-ray than the original growth; also it is easier for the *x*-ray to influence microscopic foci of malignancy than those of larger size; hence roentgenization should be recommended as soon after extirpation as is consistent with the safety of the tissues involved in the operation wound and before recurrence has manifested itself.

4. To urge the use of the *x*-ray, therefore, either alone or in combination with extirpative measures, is imperatively the duty of the medical advisor of a cancer patient.

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ABSTRACT OF DISCUSSION

DR. GEORGE E. PFAHLER, Philadelphia: Roentgen therapy and therapeutic results have not been thoroughly recognized because the work done has not been done generally by men thoroughly competent. There are in use to-day in America over 20,000 machines. Any one who is familiar with the work knows that there are probably not over twenty experts in this country. That means one in 1,000 competent to be classed as an expert. To become an expert does not simply depend on buying a machine and turning on the switch. Men become competent by much hard work, by reading the literature (and there are volumes on this subject), by careful observation and testing and by studying with other men who have established good technic and get good results. I have a patient with an osteosarcoma of the fibula which has not been treated for six years. She is well, married and raising a family. I believe that generally if we have a carcinoma that can be removed fully and completely, it ought to be extirpated at once, but sometimes there are cases which are entirely hopeless from the surgical point of view. One patient had a carcinoma which was extending across the chest from one posterior axillary line to the postaxillary line on the other side above the clavicle to down below the costal border; there was an

open ulcer the size of my hand. I told the patient's husband there was not more than one chance in a thousand. I began treatment at his request. To-day the ulcer is healed; all the evidence of the carcinoma is gone, except in the right breast which had not been amputated, and there it is reduced to one-fourth of the original mass. The left breast was amputated. There was a recurrence which extended back to the spinal column on the left, into the axillary line on the right side. To-day I can find no evidence and it is only nine months since I started treatment. With such results in hopeless cases we are bound to sit up and take notice. I believe every patient, as soon as able to leave the bed, should have a course of postoperative treatment. This reaches the smallest amount of tissue that has to be contended with, including some of the metastases that were there before the surgeon operated. If one waits for some visible evidence one will simply have that much more tissue to control. I have used the tubes from 6 to 8 inches long and I do not think it makes much difference what size the tube is. The exposure depends on the strength of the current, the penetration quality of the tube and the distance the tube is from the patient. All those factors must be worked out before the length of exposure can be determined. Each case is a law unto itself. I give from 20 to 60 or 80 milliampères minutes.

DR. W. B. SNOW, New York: I think the cases cited by Dr. Pfahler, in which it was impossible to operate, seem rather to indicate that there are many other cases in which an operative procedure might be omitted. Why it should be necessary to operate in every case, if it be possible to obtain the results which he has reported, is a question. I have seen many of these cases in the early stages of the process become arrested in their growth. I might say, furthermore, that it is impossible unless a section is made to be positive that a tumor of the breast is carcinoma or sarcoma. I believe many patients are operated on and breasts removed in which no cancerous growth existed and for that reason unless section is made it seems to me far better to use the ray before anything is done. Leduc, the eminent French scientist and *x*-ray authority, took the attitude in a recent number of the *Archives of the Roentgen Ray*, that the tumor is not the extent of the carcinomatous growth, that no one knows the limitation of the outlying disease cells, and that to operate is to open up the lymphatic channels for dissemination of the process into other parts. The recurrences that have manifested themselves so frequently in very early cases in which nothing has been done by Roentgen postoperative treatment indicate the truth of this statement. Leduc went so far as to say that where surgeons were given selected cases for operation and other cases which they rejected were turned over to the Roentgen ray treatment, in the latter the length of life was far in excess of that in patients receiving the operative treatment. He, therefore asserted a great preference for the Roentgen ray treatment. When recurrence has taken place following operation there is strong evidence that it would have been better if there had been no operation. If a radical operation is done and recurrence takes place extension into the mediastinum is certain to occur. I think that each of us has seen numerous cases in which the patients would have lived much longer without operation than they did. We as physicians and surgeons in our families shrink from operations. The Roentgen ray offers an additional defense, but I believe unquestionably that the preoperative raying is indicated in all cases, because it prevents the likelihood of dissemination from the operation. Furthermore, I believe that the postoperative ray should also be employed, as Dr. Pfahler says as soon as the patient can leave the bed. No delay for four or five days is justifiable. Further, if preoperative raying has not been done the dissemination which has taken place in the interval might lead to recurrence. It is certainly a well-established fact from the experience of those who have done scientific work in the past that the Roentgen ray has established itself on a footing which makes it impossible to gainsay its place in the treatment of malignant growths.

DR. EDWARD HOLMAN SKINNER, Kansas City, Mo.: I do not think that *x*-ray therapy is on a safe and sane basis. We should not pay so much attention to Leduc's article; it lacks in conviction what it exploits in words. I have seen many cases of breast cancer and for therapeutic possibilities I use a classification based on the pathologic life-history of such neoplasms. For instance, if a scirrhus carcinoma is thoroughly removed, there may never be any recurrence either with or without postoperative irradiation. I do not obtain the results which so many claim in cases of medullary carcinoma. We should begin to report radiotherapeutic results and failures on a definite pathologic classification. No method of therapeutics is established when only a limited number can get good literary results, and a large number obtain few actual results.

DR. ALFRED L. GRAY, Richmond, Va.: I have always maintained that there should never be any preoperative treatment of an operable cancer of the breast for the following reasons: First, the fact that from 80 to 90 per cent. of breast tumors are malignant; second, there is always a stage in the malignant growth beyond which, if it is allowed to continue, the end is inevitable; third, if that growth be removed in proper time we will not have a recurrence. I am in favor of the postoperative treatment of all malignant tumors. But I do not think we are ever justified in treating an operable case, except skin cancer, with the *x*-rays. I therefore cannot agree with Dr. Snow that many of the patients with breast tumors should not be operated on.

DR. BYRON C. DARLING, New York: What would be the effect of preoperative treatment over different lengths of time —a week, two weeks, a month, two months? What would be the action of the *x*-ray on the tissue? What fibrous condition of the tissues is this treatment apt to produce and of how much embarrassment is it to the surgeon to operate on this fibrous tissue later? Is it detrimental to the after-healing of the wound?

DR. CLARENCE E. SKINNER, New Haven, Conn.: The embarrassment to the surgeon will depend on the degree of fibrosis which has taken place and the number of the blood-vessels and vital organs that are involved in the ramifications of this fibrosis. The interference with the healing will depend on the degree of radiation which has been applied. I have seen extensive fibrosis in several cases and some surgeons have complained to me bitterly of the difficulty infused into the operation by this condition. Indeed, one surgeon has requested me, when I intend to send a patient to him later for operation, not to irradiate the case until after the operation because of this difficulty. There is a practical point involved in some cases.

COMPARATIVE STUDIES IN CANCER AND NORMAL TISSUE FERMENTS *

WALTER W. HAMBURGER, M.D.
CHICAGO

During the past few years, several investigators have devised a number of new biologic tests for the diagnosis of malignant disease. Among these may be mentioned the glycyltryptophan test of Neubauer and Fischer,[1] the silk-peptone test of Kuttner and Pulvermacher,[2] the amino-acid determination of Barlocco,[3] and Woodyatt and Jacque,[4] and the incoagulable nitrogen estimation of Morris.[5] While these several tests differ in minor details, they are all based on the supposed activity of proteolytic or peptolytic ferments contained within the cancer cells.

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* One of a series of studies from the Morris Institute for Medical Research on proteolytic ferments, the others appearing in the Journal of Experimental Medicine, 1911-1912.

1. Neubauer and Fischer: Deutsch. Arch. f. klin. Med., 1909, xcvii, 499.
2. Kuttner and Pulvermacher: Berl. klin. Wchnschr., 1910, No. 45.
3. Barlocco: Berl. klin. Wchnschr., 1910, No. 33.
4. Woodyatt and Jacque: Presented before a meeting of the Department of Medicine, Rush Medical College, November, 1911.
5. Morris: Arch. Int. Med., 1911, viii, 457.

While in many instances it has seemed that these measures have been of diagnostic value, in others the results have been directly at variance with the clinical and pathologic findings. As a result, a wide divergence of opinion has arisen as to their clinical value, some commending them highly, others pronouncing them valueless. In the attempts to make these methods more reliable, several modifications have been suggested and new data added, all of which, however, without materially increasing the uniformity of the results.

If one examines these clinical reports carefully, one is struck by the meagerness of the facts concerning the ferment itself. One searches fruitlessly for exact data concerning the nature of this cancer ferment, regarding its biochemical classification, its relation to substrate and split products, its relation to similar ferments found normally in body cells and body fluids, the influence of external factors, etc. In these papers the language employed and the conditions described are clinical, but the phenomenon concerned is biochemical. Naturally between the two there is a wide gap of assumption. In other words, the effort is made to apply a single biochemical fact to a wide range of clinical problems, without due appreciation of the biochemical principles involved.

In view of these facts it was decided to direct this research toward the ferments themselves and to devote the preliminary work toward the development of an adequate biochemical technic, for from the experience gained from a study of the relations of pepsin to so-called antipepsin in this laboratory last year,[6] it was found by use of a carefully controlled technic that true antipepsin could not be demonstrated in animal serum. The conclusions reached at that time were as follows:

1. Fresh and inactivated animal serum under proper conditions will bind pepsin quantitatively in weak acid solution and will prevent it from digesting protein even after the addition of free hydrochloric acid in excess.

2. This binding and inactivation of pepsin cannot be considered as due to a specific antipepsin.

3. The phenomenon has been named "pepsin deviation" in analogy with the deviation described for other ferments, notably trypsin.

4. The ability of animal serum to deviate pepsin has been responsible for most, if not all, of the published accounts of antipepsin.

5. By the use of a technic elaborated to control pepsin deviation it has been found impossible to demonstrate normal antipepsin in the blood-serum of the dog, cat, guinea-pig, beef, horse, rabbit and man.

THE PROBLEM AS PRESENTED BY THE LITERATURE

Through the work of Müller,[7] Petry,[8] Emerson,[9] Neuberg,[10] Buxton and Shaffer[11] and others, it is now generally accepted that cancer cells contain proteolytic ferments which differ in some fashion from the ferments contained in normal tissue cells. Up to most recent time these differences could be summed up under two headings; first, that cancer cells underwent autolysis more rapidly than normal tissue cells; second, that cancer ferments possessed the power of heterolysis or the ability to attack foreign protein, a power never demonstrated in normal cell ferments.

Although these assumptions have been vigorously assailed by other investigators (Hess and Saxl,[12] Kepinow,[13] Lieblein,[14] etc.), Blumenthal[15] does not hesitate to draw far-reaching conclusions regarding the action of ferments in tumors, asserting that their infiltrative growth and the cachexia which they produce are dependent entirely on the above characters of ferments, as pointed out by Ewing.[16]

Most recently, Abderhalden[17] and his associates, from carefully conducted experiments on synthetic polypeptids, concluded that, while cancer cells in many instances split polypeptids and particular peptones the same as normal tissue cells, in others a distinct difference could be determined. Thus in the use of the tripeptid *d*-alanyl-glycyl-glycin, the pulp of normal tissues and some tumors split off *d*-alanin, while other carcinomas of man and animals split the tripepfid in an atypical way—liberating *d*-alanyl-glycin, a substance never produced by normal cell ferments. Abderhalden believed, therefore, that the ferments of some malignant tumors differ in their structure and configuration from the corresponding ferments of normal cells.

What constitute the corresponding ferments of normal cells and what facts are known concerning them? Salkowski first called attention to the self-digestion of organs under the term "autolysis" and later through the work of Hofmeister, Müller, Jacoby, etc., it became evident that a whole group of interacting and activating catalytic processes were concerned. Although none of these autolytic ferments have been isolated in a pure state, they appear to consist in part of true proteases, ferments capable of hydrolyzing genuine (native) protein, and in part of ereptases, ferments which take up the digestion of the split products of protein digestion —peptones, polypeptids, etc.—at the point where protease has left off. It is with these latter ferments, the ereptases of normal cells, that the analogous cancer ereptase must be compared; for although both cancer cell and normal tissue cell contain other ferments, it is on these ereptases that the clinical tests referred to have been based, and it is with the comparative study of these ereptases that the present paper is concerned.

The nature and characteristics of the ereptases of normal cells have been exhaustively studied by many investigators, and a large number of observations made concerning their specificity, their split products, the influence of reaction and other external factors, their physiologic and pathologic significance, their presence in individual organs, etc. A detailed consideration of this work would lead us too far afield. For this report it is sufficient to state that they act best in the natural organ juice (*Press Saft*) as soon as a slight acidity has occurred; that they are activated by weak acids 1/12 to 1/130 normal) in particular by lactic acid; that they are inhibited by alkalies (stronger than 0.26 per cent.).

SOURCES OF ERROR IN SOME OF THE PUBLISHED REPORTS

From certain preliminary experiments with the juice expressed from cancer and normal tissues, it was thought that the presence of blood or blood-serum which had not been entirely removed might be a factor in the results. An inquiry into the literature revealed some interesting facts, that while the earlier investigators had apparently

6. Hamburger: Jour. Exper. Med., 1911, xiv, 535.
7. Müller: Ztschr. f. klin. Med., 1889, xvi, 496.
8. Petry: Ztschr. f. phys. Chem., 1899, xxvii, 398.
9. Emerson: Deutsch. Arch. f. klin. Med., 1902, lxxii, 415.
10. Neuberg: Berl. klin. Wchnschr., 1905, xlii, 118.
11. Buxton and Shaffer: Jour. Med. Research, 1905, xiii, 543.
12. Hess and Saxl: Wien. klin. Wchnschr., 1908, 33.
13. Kepinow: Ztschr. f. Krebsforsch, 1909, vii, 517.
14. Lieblein: Ztschr. f. Krebsforsch, 1910, ix, 609.
15. Blumenthal and Wolff: Med. Klin., 1905, xi, 166, 364.
16. Ewing: Arch. Int. Med., 1908, i, 175.
17. Abderhalden: Ztschr. f. Krebsforsch, 1910, ix, 226.

not attempted to remove all blood-serum from the organs, the later ones, recognizing this possible source of error, washed the organs as well as possible with water of salt solution. For instance, Salkowski and Petry make no mention of freeing the organs from blood. Somewhat later, however, Blumenthal and Wolff mention washing the tumor with water to remove blood-coloring matter, and still more recently Buxton observed that the presence of blood from which the tissues could not be freed by the methods used in animal experiment would always be a disturbing element in the examination of the cell products of tumors; finally, Abderhalden, in the best recent piece of work, washed the tumors with 0.85 per cent. sodium chlorid until the wash-water had become colorless.

While in the later work the organs were washed free from blood-coloring matter, they were not effectually freed from all trace of blood-serum, as will be shown later. The importance of thus removing all trace of serum may be judged from the fact that several investigators (Vernon,[18] Delezene and Pozerski,[19] Opie and Barker,[20] Abderhalden and Oppler[21]) have shown that blood-serum contains an ereptic ferment. The presence of this serum ereptase in expressed tissue juice might, therefore, account for the ereptic action attributed to the organ, if the latter were not freed entirely from all serum present.

Various substrates were used. Casein and inactivated beef-serum served as native proteins to test for the presence of protease. With the exception of a very slight hydrolysis of casein in one of the tumor-juice experiments, no evidence of proteolytic action was found.

A 2 per cent. Witte's peptone was used to test for ereptase, the increase in the production of amino groups, as estimated by the formol titration of Sörensen[22] serving as an index (amino index). The use of peptone as a substrate and the application of the formol method for the quantitative estimation of ereptic action was first suggested by Dr. R. T. Woodyatt, to whom I desire to give credit at this time.

Tryptophan was tested for by the drop by drop addition of bromin water to a small quantity of the mixture previously acidified by a few drops of 3 per cent. acetic acid.

The experiments were performed as follows: 10 c.c. of the organ juice or 0.05 gm. washed cell emulsion was added to 50 c.c. of the peptone solution in an Erlenmeyer flask; 10 c.c. of the mixture were then removed for control and titrated with tenth-normal sodium hydroxid for total acidity and amino groups; 2 c.c. toluene were then added to each flask, after which they were placed in the incubator. At varying intervals thereafter 10 c.c. of the flask contents were removed and titrated as before, and the degree of digestion expressed in cubic centimeters of tenth-normal sodium hydroxid per hundred.

TABLE 1.—EXPERIMENTS WITH THE JUICE OF NORMAL TISSUES

Tissue Juice From	Control		24 hours		7 to 14 Days		Increase in Formol Titration (Amino Index) in		Tryptophan
	Acidity	Formol Titration	Acidity	Formol Titration	Acidity	Formol Titration	24 Hours	7-14 Days	
Kidney	10	12	9	54	..	..	42	..	++++
Liver	11	20	18	51	14	56	31	36	++++
Spleen	10	12	14	32	12	48	20	36	+++
Stomach fundus mucosa	10	17	10	36	..	..	19	..	+++
Pyloric mucosa	7	12	7	22	7	42	10	36	+++
Fundus serosa	8	10	7	18	7	48	8	38	++
Pyloric serosa	7	11	6.5	19	6	40	8	30	++

THE METHODS USED IN THIS RESEARCH

Tumors obtained as soon as possible under aseptic precautions from the operating or autopsy room were washed free from macroscopic blood with water or Locke's solution. The tumor was then divided with a meat-grinding machine, twice the volume of Locke's solution added and the juice filtered through one layer of sterile gauze. The filtrate was then centrifugalized and the supernatant fluid poured off for control, while the sediment, consisting of individual cells or small groups of cells, was thoroughly washed three times with Locke's solution, as in the method of washing leukocytes.

Normal organs were obtained from rabbits and dogs. The dogs were exsanguinated by bleeding from a carotid cannula, while perfusing with Locke's solution through a cannula inserted into the femoral vein. After the organs (liver, kidneys and spleen) had been removed they were still further washed by a cannula inserted directly into the afferent vessels. The organs were then divided, filtered, centrifugalized and washed as with the tumor tissue. Blood-serum was obtained from beef, hog, horse, dog and rabbit.

THE NATURE AND CHARACTERISTICS OF THE PROTEOLYTIC ENZYMES FOUND IN THESE TISSUES

In Table 1 are collected the experiments with the juice of normal tissues, the organs being arranged in the order of their ereptase content. In this series the organ cells were not washed separately, the organs being merely washed *in toto* and freed from blood-coloring matter as much as possible and the expressed tissue juice used. The column marked "control" serves as a basis of comparison of the acidity and the formol titration figures; the succeeding two columns show the increase in the formol titration due to ereptic digestion. The explanation of the formol figure in the "control" column lies in the fact that Witte's peptone does not consist solely of peptone, but contains besides a number of free amino groups, as well as proteoses, albumoses, etc. The next two columns show the actual increase in formol titration (amino index) in twenty-four hours and in seven to fourteen days, respectively. The last column shows approximately the degree of tryptophan present.

In this series, as was found constantly, kidney ereptase predominates, ereptase of liver was less, and of spleen least. In the four portions of the stomach, the fundus

18. Vernon: Jour. Physiol., 1905, 32, 33.
19. Delezene and Pozerski: Compt. rend. Soc. de biol., 1903, March 7, May 30.
20. Opie and Barker: Jour. Med. Research., 1907, ix, 207.
21. Abderhalden and Oppler. Ztschr. phys. Chem., 1907, liii, 294.
22. Sörensen, S. P. L.: Enzymstudien, Biochem. Ztschr., 1907-1908, vii, 45.

mucosa contained most ereptase, while the mucosa throughout contained more than the serosa. It may further be noted that at the end of seven to fourteen days the formol figures for all tissues approached approximately a level, somewhere between 30 and 40, probably because of the fact that at a certain concentration of amino groups, ereptase is inhibited and further ereptic action prevented—an expression of antiferment (anti-ereptic) action.

In Table 2 are grouped the experiments with the juice of tumor tissues.

In this series, the two tumors of the type of carcinoma contained most ereptase, the scirrhus containing less and the sarcoma still less. This is of interest in connection with the results of Abderhalden and Rona,[23] and Hess and Saxl, who found by the use of an entirely different technic that those carcinomas belonging to the group of adenocarcinoma split glycyl-tyrosin similarly to normal tissue, while those composed of connective tissue stroma (scirrhus carcinomas) caused no splitting. It is further of interest to note that from the standpoint of the degree of peptone-splitting, cancer ereptase stands midway between liver and spleen ereptase, so that one could not accept either increase or decrease of catalytic activity as an evidence of ferment specificity. Tryptophan formation was constant in both normal and cancer ereptase experiments and paralleled closely the amino figures. As a general conclusion it appears clear, therefore, that from the standpoint of quantitative amino group and tryptophan formation, as well as from the extent of their production, cancer ereptase and normal tissue ereptase cannot be distinguished.

TABLE 2.—EXPERIMENTS WITH THE JUICE OF TUMOR TISSUES

Tissue	Control		24 Hours		7 to 14 Days		Increase in Formol Titration (Amino Index) in		Tryptophan
	Acidity	Formol Titration	Acidity	Formol Titration	Acidity	Formol Titration	24 Hours	7-14 Days	
Adenocarcinoma breast ...	7	10	8	37	7	54	27	44	++++
Carcinoma breast	9	10	11	34	8	44	24	34	+++
Scirrhus carcinoma breast.	9	13	8	31	15	49.5	18	36.5	+++
Sarcoma tibia	7	9	9	17	8	16	8	7	++

TABLE 3.—SERUMS TESTED FOR EREPTASE

Animal	Control		24 to 48 hours		7 to 14 Days		Increase in Formol Titration (Amino Index) in		Tryptophan
	Acidity	Formof Titration	Acidity	Formol Titration	Acidity	Formol Titration	24 Hours	7-14 Days	
Hog serum	7	13.5	6.5	26	11	33	12.5	19.5	+++
Horse serum	9	13	10.5	23	8	33	10	20	+++
Rabbit serum	8	15	10	26	..	..	11	..	++
Man serum	10	18	12	22	12	32	4	14	+++
Beef serum	13	13	7	18	..	..	5	..	+
Dog serum	8	8.5	8	11	10	20	2.5	11.5	

The presence of an ereptase in blood-serum was demonstrated by use of the same technic as that employed in the series of normal tissue and cancer juice experiments. Table 3 contains the results of a number of serums tested for their ereptase content.

In this series hog- and horse-serum showed the largest content of ereptase, dog- and beef-serum the least. Compared with the ereptase of normal organs and tumors, one may say in general that the ereptase of animal serum appears identical, differing only quantitatively, the serum containing less than the solid tissues. The further observations on serum ereptase, the relation of acids, alkalies and chloroform and the presence of the ferment in the albumin or globulin fraction of the serum, as well as the results of other observers are not directly related to the present problem and will be reserved for separate publication.

With the demonstration of an apparently similar ereptic ferment in normal organs, tumors and blood-serum, the question arose, Are the ereptases of normal and cancerous tissues to be regarded not as true intracellular ferments, but merely as ferments of the blood-serum which had not been entirely removed by washing? While the earlier experiments suggested that such might be the case, the later tests with more careful washing of separated cells showed conclusively that normal and cancerous cells contain true intracellular ereptases whose activity first becomes evident after autolysis has freed them from the cells. This may readily be seen from the accompanying protocol (Tables 4 and 5) taken from an experiment on some comparative determinations of the ereptases of blood-serum, washed liver and washed kidney cells, all obtained from the same animal (dog) at the same time.

These results show the prompt increase in the formol titration figure by kidney and liver *juice* in fourteen to forty-six hours, contrasted with the slow increase by the *washed* kidney and liver *cells*. It is probable that the presence of more ereptase in the organ juices is responsible for this prompt hydrolysis of peptone and that in the process of dividing and grinding the organ, the ferment is liberated. It seems probable, also, that the slower peptone digestion by the washed cells is due to the fact that the contained intracellular ferments are first liberated and capable of activity when freed from the surrounding cell protoplasm through the slower process of autolysis. These results confirm the relatively small content of ereptase in blood-serum, and finally and most interestingly, they show how by combining washed cells and serum a degree of digestion occurs at the end

23. Abderhalden and Rona: Ztschr. phys. Chem., 1907, liii, 308.

of 120 hours approximately equal to the maximum degree obtained by organ juice.

In view of the presence of ereptases in normal and malignant tissues and in blood-serum, it would not be surprising to find them distributed elsewhere in the body fluids. It may be remembered, in this connection, that Warfield[24] described a peptid-splitting ferment in saliva and in mother's milk. In accordance with these facts some preliminary tests with pleuritic and ascitic fluids were made with the result that ereptase could also be demonstrated in these secretions. It would appear, therefore, that ereptase has practically a universal distribution not only in normal tissues and fluids, but in pathologic tissues and secretions as well.

One may be permitted in closing to speak for a moment of the evident relationship between the ereptase of blood-serum and body fluids and those of the fixed tissue cells and leukocytes. In the latter regard Jobling and Strouse[25] in this laboratory showed recently that so-called leukoprotease consists in part, at least, of ereptase. It would seem likely, therefore, that although as

TABLE 4.—EREPTASES OF BLOOD-SERUM AND WASHED KIDNEY CELLS IN DOG

Tissue	Increase in Formol Titration (Amino Index) in		
	14 Hours	46 Hours	120 Hours
Kidney juice (dog).....	42	51	51.5
Washed kidney cells (dog)..	11	29	50
Dog serum	3	8	16
Washed cells plus serum....	20	42	48.5

TABLE 5.—EREPTASES OF BLOOD-SERUM AND WASHED LIVER CELLS IN DOG

Tissue	Increase in Formol Titration (Amino Index) in		
	14 Hours	46 Hours	120 Hours
Liver juice	22	34	45
Washed liver cells (dog)....	7	18	26
Dog serum	3	8	16
Washed cells plus serum....	11	29	43

yet direct experimental proof is wanting, an intimate relationship exists between these ubiquitous peptone-splitting ferments. And finally it would also appear likely that future work will show that these tissue ereptases play an important rôle in the body economy, particularly in the mechanism of intermediate metabolism and parenteral protein digestion.

Assuming that the ereptic ferments of cancer and normal tissues cannot be distinguished in their ability to hydrolyze peptone and produce tryptophan, are we to conclude that all tests based on the presence of these ferments are of no clinical value? I believe not, for although the stomach, for example, does contain ereptase in common with all other organs, the probabilities are that this ereptase is not *secreted* into the stomach contents, at least to any appreciable degree. On the other hand, it seems likely that a rapidly growing stomach cancer with its ready tendency to break down, with its ulcerating exuding surface, would discharge its own intracellular ereptase, together with the ereptase derived from the blood-serum, directly into the stomach juices. In accordance with this conception, a method of procedure as that of Barlocco or of Woodyatt and Jacque, allowing of the quantitative measurement of all the amino groups in the aspirated stomach contents, would be of greater value than the qualitative detection of one single one such as tryptophan. For with such a method it would be of little import should a moderate degree of peptone-splitting occur from the ereptase of swallowed saliva, from the trypsin of regurgitated chyme or from the ferments of blood or bacteria, providing that the degree of hydrolysis by the tumor ereptase was definitely in excess.

In this regard we should remember that similar quantitative methods are of the greatest clinical value; for example, the Widal test, in which only the agglutination of typhoid bacilli by highly diluted serums is said to be positive.

CONCLUSIONS

1. The ferments of cancer tissue, on which the glycyltryptophan and less well-known biologic tests are based, belong to the group of ereptases.

2. The ereptases of cancer tissue cannot be distinguished in their ability to split peptone and form tryptophan from the ereptases found in normal tissue cells, blood-serum, saliva, mother's milk, pleuritic and ascitic fluids and leukocytes.

3. It appears likely that these several ereptases are identical and that the ereptases of blood-serum, leukocytes, saliva and other body fluids are derived from the fixed tissue cells.

4. Compared quantitatively, most cancer tissues contain less ereptase than normal kidney (dog) and normal liver (dog), although slightly more than normal spleen (dog), and distinctly more than blood-serum (various animals).

5. While blood-serum contains relatively less ereptase than most tissues, the last trace of serum must be removed if one wishes to work solely with the tissue ferments. To accomplish this, repeated washing of individual cells, with an isotonic solution (after the method of washing leukocytes) has been found to be necessary.

I desire to thank Dr. Jobling for continued interest and encouragement during the progress of this work.

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ABSTRACT OF DISCUSSION

DR. GEDIDE A. FRIEDMAN, New York: I have heard a paper from the Mayo clinic about the value of the glycyltryptophan test by Dr. Smithies, a man who had a very large experience with this test. His conclusions are practically those that I gave in a paper a year ago, although they were based on much smaller material. In his cases of gastric cancer the test was positive in only about 33 per cent. The tryptophan test was positive in only 7 per cent. of his cases. The latter test is an old one, recommended first by Erdmann and Winternitz, but very soon disproved by others. I believe that so far we have to rely on the history and routine laboratory findings, which in the majority of cases enable one to make a diagnosis of gastric cancer.

DR. WALTER W. HAMBURGER, Chicago: The qualitative test for tryptophan alone has not much clinical value, but it is of some significance in connection with other findings. Work on a quantitative method of amino-acid determination is now well under way, but the results are not ready for publication at the present time.

24. Warfield: Johns Hopkins Hosp. Bull., 1911, xxii, 242; Jour. Med. Research, 1911, xxv, 235.

25. Jobling and Strouse: To be published in Jour. Exper. Med. September, 1912.

ACETONURIA

ITS RELATION TO POSTOPERATIVE VOMITING IN SEVEN HUNDRED CASES OF ETHER ANESTHESIA *

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In 1907, a patient on whom I had operated for acute appendicitis with abscess, eighteen hours after operation developed great restlessness, vomiting, convulsions and coma. She was treated by injection of normal salt solution by rectum and intravenously, hot packs and stimulation; and fortunately she recovered. Although not recognized at the time, the condition was later thought to be due to acid intoxication, but no examination of the urine for acetone or diacetic acid was made. About a year later two other cases of this kind occurred among Dr. F. F. Simpson's patients, and in these acetone was present after operation. Both of these patients recovered under similar treatment except that sodium bicarbonate was given by bowel. Ether was the anesthetic used in all three cases.

These cases led Dr. Simpson to have the urine examined for acetone and diacetic acid both before and after operation. Since this routine examination has been made no further serious cases of acid intoxication have occurred in Dr. Simpson's service at the Allegheny General Hospital. Much has been written on this subject since that time, and there seems to be some difference of opinion in regard to the significance of postoperative acetonuria. For example:

Rice[1] in 1908 found acetone in the urine of 90 per cent. of 202 cases reported, but in only 10 per cent. of these were there any symptoms attributable to it, and at about the same time Wallace and Gillespie[2] reported a very marked decrease in the secondary vomiting when the percentage of acetone cases was diminished.

In order to ascertain whether in our experience at the Allegheny General Hospital there is any connection between the ordinary postoperative vomiting and acetonuria this series of cases has been collected. It includes about an average of abdominal operations, pelvic operations of all kinds, appendix, gall-bladder, kidney cases and a few plastic and rectal cases. Only those cases having a complete record both before and after operation were included. This practically limited the cases to abdominal sections as only in these was there an accurate record of the postoperative vomiting. Each patient had a special nurse day and night for forty-eight hours after operation.

Any patient who vomited at any time during the forty-eight hours was included in the postoperative vomiting class. In practically all cases, the ether was given by the open drop method, by Dr. W. C. Maxwell, an expert.

The urine was tested usually the day before operation, and after the operation a specimen of the first urine voided was tested and later the complete twenty-four hour specimen. In no case was diacetic acid found without acetone and, although not tested for in about 25 per cent. of cases, it was thought safe to consider those without acetone negative for diacetic acid also. This agrees with the experience of Rice and others.

LEGAL'S QUALITATIVE TEST FOR ACETONE

Take 1½ inches of urine in a tube with about 1/15 as much acetic acid. Then add about 8 or 10 drops of freshly prepared sodium nitroprussid solution, shake well and add ammonium hydroxid. A purple color indicates acetone.

QUANTITATIVE TEST FOR ACETONE

Distil 100 c.c. of urine for about fifteen minutes, allowing the distillate to pass through a cooling box over into a flask containing distilled water. Be sure to have end of tube, running from flask of urine through cooling box to flask containing distilled water, immersed. Then take the flask of distilled water and distillate and add iodin solution (iodin sol. n/10 12.685 c.c., KI 25.37 gm., aqua dest. q.s. 1,000 c.c.) 10, 15 or even up to 50 c.c.; be guided in amount by the color reaction in qualitative test. Then add concentrated sodium hydroxid solution (U. S. P.) until color disappears, followed by concentrated hydrochloric acid until color reappears; then add a few drops of boiled starch as an indicator. Then titrate with sodium thiosulphate solution (sodium thiosulphate sol. n/10 24.8 c.c., aqua dest. q.s. 1.000 c.c.); take reading when blue color disappears, after which multiply the reading by 0.0967 to give amount of acetone in 1,000 c.c. of urine.

GERHARDT'S DIACETIC ACID TEST

Take 1½ inches of urine plus 10 drops of tincture ferric chlorid, shake and if a reddish brown color is obtained, take another specimen of urine and boil, then again add 10 drops of tincture ferric chlorid and if a yellowish-brown color still appears, diacetic acid is positive; if a yellowish-brown color, diacetic is negative.

VOMITING

In Table 1 is shown the average vomiting in all cases and the influence of acetone, and acetone and diacetic acid both before and after operation.

TABLE 1.—SHOWING THE VOMITING IN ALL CASES AND THE RELATION TO VOMITING OF ACETONE AND DIACETIC ACID BEFORE AND AFTER OPERATION

	Numbers	Per Cent.	No Vomiting		Vomited.		Number of Times Vomiting Occurred	Onset of Vomiting After Anesthesia in Hours	Duration of Vomiting from Anesthesia in Hours.
			Number	Per Cent.	Number	Per Cent.			
Av. for all cases..	700	.....	105	15.00	595	85.00	6.44	6.02	27.63
BEFORE OPERATION									
No acetone	588	84.00	90	18.85	498	84.69	6.27	4.85	25.99
Acetone present ..	100	14.29	15	15.00	85	85.00	6.9	11.1	31.74
Acetone and diacetic acid present	12	1.71	0	0	12	100.00	7.2	4.5	28.5
AFTER OPERATION									
No acetone	151	21.55	32	21.19	119	78.81	5.14	5.91	20.32
Acetone present ..	392	56.00	51	13.3	341	86.7	6.79	6.05	30.9
Acetone and diacetic acid present	157	22.45	22	14.00	135	86.00	6.7	6.02	25.88

It was found that 85 per cent. of all patients vomited at least once, some time during the first forty-eight hours; the average number of times vomiting occurred was 6.44, the onset 6.02 hours, and the duration 27.63 hours after operation.

BEFORE OPERATION

In those without acetone the proportion vomiting was practically the same as the average, and the severity but slightly less.

Those with acetone present were slightly above the average in all respects but the difference is again not marked. Only twelve of the 700 patients had both acetone and diacetic acid. These all vomited after anesthesia, slightly more than the average but the duration was not so great as those with acetone alone. These are too few in number to enable us to draw any conclusions.

AFTER OPERATION

Acetone or both acetone and diacetic acid were found in 549, or 86.45 per cent, of all cases. This practically agrees with the findings of Rice,[1] previously quoted.

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at its Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. Rice: Boston Med. and Surg. Jour., clix, No. 2, p. 48.
2. Wallace and Gillespie: Lancet, London, 1908, ii, 1665.

In the 21.5 per cent. without acetone the vomiting was less frequent than the average, practically 79 per cent. as compared with 85 per cent. On referring to Table 1 it is seen that the vomiting was less frequent and less severe in those without acetone than in those with acetone or with both acetone and diacetic acid.

TABLE 2.—SHOWING THE PERCENTAGE OF POSTOPERATIVE ACETONURIA IN THE NON-VOMITING AND VOMITING CASES

	Total Cases		No Acetone or Diacetic Acid		Acetone		Acetone and Diacetic Acid	
	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
	700	100	151	21.55	392	56.00	157	22.45
No vomiting	105	15	32	30.48	51	48.57	22	20.95
Vomited	595	85	119	20.00	341	57.31	135	22.69

Table 2 shows the proportion of acetone and diacetic acid after operation among those who did not vomit and those who did. Among the former 30 per cent. were free from acetone and in the latter, or those who did vomit only 20 per cent were free from acetone. This would seem to show that the presence of acetone or of acetone and diacetic acid either before or after operation increased to some extent not only the liability to post-operative vomiting, but also the duration and severity.

We were not able to determine any relation between the amount of acetone present and the severity of the vomiting. Not all the patients had a quantitative test made. One patient with 0.899 gm. acetone per 1,000 c.c. of urine, the greatest amount found, and diacetic acid, also, did not vomit at all.

As I have already stated, there were no cases of acid intoxication among those patients. In order to determine whether there was any connection between the more severe cases of vomiting and the presence of acetonuria, I collected the cases in which the vomiting lasted more than twenty-four hours after operation. This is shown in Table 3. In a total of 285 cases the

TABLE 3.—SHOWING THE RELATION BETWEEN DURATION OF VOMITING, IN PROTRACTED CASES, AND ACETONURIA, AND ALSO THE RELATION WHEN THE ONSET OF VOMITING IS LATE

	Number	No Acetone or Diacetic Acid		Acetone		Acetone and Diacetic Acid	
		Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Total	700	151	21.55	392	56.00	157	22.45
Vomiting lasting more than twenty-four hours	285	41	14.38	183	64.21	61	21.41
Onset of vomiting more than twelve hours after operation	79	22	27.85	40	50.63	17	21.52

proportion of those free from acetone is below the average. On the other hand in those patients in whom the vomiting began late, in 79, more than twelve hours after operation, those free from acetone were in greater proportion than the average. This would seem to indicate that when vomiting does occur it is liable to be more prolonged when acetone is found in the urine.

CAUSES OF POSTOPERATIVE ACETONURIA

In order to determine whether there was any relation between the length of anesthesia, or the amount of ether, and the acetonuria, I divided these cases into half hour periods (Table 4). In a general way, there was a gradual

TABLE 4.—DURATION OF ANESTHESIA IN RELATION TO ACETONE AND DIACETIC ACID *

	Total	No Acetone or Diacetic Acid		Acetone		Diacetic Acid and Acetone	
		Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
All cases	700	151	21.57	392	56.00	157	22.43
30 min. or less; average 24.5 min.; 3.4 oz.....	67	7	10.45	41	61.19	19	28.36
31 to 60 min.; average 43.4 min.; 5.57 oz....	326	57	17.48	195	59.81	74	22.7
61 to 90 min.; average 73.5; 7.85 oz.....	189	48	25.39	107	56.61	34	18.5
Over 90 min.; average 98.6; 9.12 oz.....	36	7	19.44	16	44.44	13	36.11

* Record of anesthesia incomplete in eighty-two cases.

increase in the number of cases free from acetone as the length of anesthesia and the amount of ether increased.

We are forced, therefore, to look for some cause for acetonuria outside of the anesthetic itself. Ewing[3] in 1908 showed that acetone compounds are "derived mainly from the fat tissues and to a less extent from the food," and "that the complete combustion of fats requires the simultaneous katabolism of carbohydrates, in the absence of which there is a defective and possibly abnormal course of fat combustion lodging in the acetone compounds." Frew[4] has more recently emphasized the importance of carbohydrate starvation.

In the preparation of patients for operation, it is our custom in Dr. Simpson's service at the Allegheny General Hospital to put them on liquid diet for the entire day before operation and this includes practically no carbohydrates, the diet consisting of broths and milk entirely. They are also given a purge of castor oil or more recently compound cathartic pills. It would seem that possibly this starvation, particularly of carbohydrates, caused a disturbance of the metabolism of the fats with the production of acetonuria.

Waugh[5] in the discussion of Frew's paper says that he has abandoned the pre-anesthetic purge and restriction of diet. He reports over 2,000 chloroform anesthesias in children without a single case of acid intoxication.

In order to overcome this carbohydrate starvation, for a time glucose was given before operation but no decided difference was noticed in the post-operative vomiting. The majority of the patients objected strongly to the glucose when given by mouth and it was impossible to give it by rectum on account of the purge, so that this was abandoned.

DURATION OF ANESTHESIA IN RELATION TO VOMITING

This is shown in Table 5. There is a gradual increase in the percentage of those who vomited as the duration of anesthesia increases. This difference is not great but is definite and uniform and would seem to show that the longer the anesthesia the greater the liability that vomiting will follow it.

3. Ewing: Arch. Int. Med., 1908, ii, 330, 448.
4. Frew: Proc. Royal Soc. Med., 1912, v, No. 5, p. 60.
5. Waugh: Proc. Royal Soc. Med., 1912, v, No. 5, p. 73.

TABLE 5.—DURATION OF ANESTHESIA IN RELATION TO VOMITING

	Total	No Vomiting		Vomited	
		Number	Per Cent.	Number	Per Cent.
30 minutes or less	700	105	15.00	595	85.00
31 to 60 minutes	67	13	19.4	54	80.6
61 to 90 minutes	326	47	14.42	279	85.58
Over 90 minutes	189	22	11.65	167	88.35
	36	4	11.11	32	88.89

TREATMENT

As acetonuria seems to be due to carbohydrate starvation it would seem that patients should have this form of food before operation. Glucose was not satisfactory and the other forms of carbohydrates have not been tried on account of the liability of forming gas in the intestine. In a large proportion of abdominal cases it is necessary to pack off the field of operation and this is impossible unless the intestine is empty.

For the acetonuria itself large doses of alkalies, sodium bicarbonate, by bowel, by mouth if possible, or lavage with sodium bicarbonate solution, seems to be rational and in this series of cases has been of undoubted value in many cases.

CONCLUSIONS

1. Vomiting occurs in a large percentage of cases after anesthesia.
2. The liability to vomiting is increased when acetone is found in the urine.
3. Protracted vomiting is best treated by sodium bicarbonate by bowel and by lavage. These patients need careful watching on account of the liability of acid intoxication.
4. Acetonuria is due to faulty metabolism and increased by carbohydrate starvation.
5. Acetonuria has no relation to the length of anesthesia.
6. The duration of anesthesia has only a slight influence on vomiting.

I want to express to Dr F. F. Simpson my appreciation of his kindness in permitting me to review these cases, the great majority of which were his, only a few of them being my own, the laboratory work was done under his direction.

200 Ninth Street.

ABSTRACT OF DISCUSSION

DR. JOHN M. SWAN, Rochester, N. Y.: The conclusions reached by Dr. Chalfant seem to me to point to disturbed metabolism as the cause of the acetonuria after anesthesia. It would be interesting if Dr. Chalfant could tell us whether the patients who had acetonuria after operation were the same ones who showed an increase in acetone before operation. I am inclined to think that such a study would show that the patients with excess of acetone before operation would have an excess afterward, and that the vomiting would be more troublesome in such cases than in patients with no acetonuria before operation and little afterward. The method by which Dr. Sutter determined the amount of acetone in the urine of the patients just referred to is as follows: The twenty-four-hour specimen was measured, and 250 c.c. were distilled until the distillate amounted to 50 or 70 c.c., which would represent all the acetone in that urine. The distillate was put into a graduated cylinder and treated with Lugol's solution three times the ordinary strength. The iodoform produced by the action of Lugol's solution on the acetone in the distillate was dissolved with ether. The total amount of ethereal extract was measured and 10 c.c. of that extract were evaporated to dryness in a weighed glass dish. From the weight of the iodoform in the 10 c.c. of ethereal extract the amount in the entire ethereal extract was calculated, and this was expressed as acetone.

DR. S. A. CHALFANT, Pittsburgh: Of the patients who had acetonuria before operation, the proportion not vomiting is shown to be 15 per cent., which is the same as the 15 per cent. of all cases, so that the influence of acetone before operation did not seem to be very important.

TREATMENT OF TUBAL PREGNANCY

WITH SPECIAL REFERENCE TO IMMEDIATE OPERATION FOR RUPTURE, BASED ON A STUDY OF TWO HUNDRED OPERATIONS * †

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NEW YORK

Gynecologists are agreed as to the necessity of immediate operation in unruptured tubal pregnancy; it is in the ruptured variety that opinions differ with regard to the indication for immediate operation.

While I have always maintained that tubal pregnancy is a surgical disease, requiring surgical intervention as soon as possible, I have never insisted, and do not now, that an unruptured tubal pregnancy must be rushed to operation; on the contrary, there is no particular danger or risk to the patient if, for some good reason, the operation is postponed for a short time, provided, however, that the patient is kept under close observation and is so situated that an operation can be performed at once in the event of rupture. On the other hand, it is in ruptured tubal pregnancy, especially when it is accompanied by shock and collapse, that I advocate and urge the immediate operation.

My object in presenting this paper is to offer an earnest plea for the general recognition by abdominal surgeons of the dictum that hemorrhage into the peritoneal cavity must be sought for and checked as soon as diagnosed; and that opening the abdomen of a patient profoundly shocked and anemic from abortion or rupture of a tubal pregnancy does not *per se* offer any graver risk than opening the abdomen for any other intra-abdominal condition; and, furthermore, that delay in operating, no matter how slight, means increased risk, greater danger and probably death to the patient. This plea is based on a study of 200 operative cases.†

That patients do die of hemorrhage, the result of ruptured tubal pregnancy or abortion, will be seen from the following case, which is reported in detail:

CASE 1.—*Patient.*—B. F., aged 28, called at my office with Dr. M. J. Katz, July 8, 1911. Patient had been married seven years and had three children; the last child was 9 months old; she was still nursing. She did not menstruate for four months, subsequent to her delivery, and, after menstruating twice, had amenorrhea for two months. Then for six weeks she had irregular uterine bleeding and pain in lower abdomen.

Examination.—She was examined at a clinic on the previous day and a diagnosis of "tumor" was made. The patient was well nourished and in good physical condition. Her pulse was normal and strong. On vaginal examination I felt a large,

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at its Sixty-Third Annual Session, held at Atlantic City, June, 1912.

† Because of lack of space this article is abbreviated by the omission of the table of cases. The complete article appears in the Transactions of the Section and in the author's reprints.

elastic, fluctuating mass on the left side, but did not stop to make a thorough bimanual examination for the reason, as I stated to the physician, that, as the case was very suggestive of tubal pregnancy, further manipulation might cause a rupture. I advised immediate transfer to the hospital.

The patient experienced no pain or discomfort while being examined, and left the table in good condition. The physician and myself then spent some time in trying to persuade her to go directly to the hospital for operation. After a little while the physician left, and the patient and her husband retired to the waiting-room to think the matter over. On entering the waiting-room a little later, I noticed a change in the patient; she was feeling faint and was complaining of pain in the abdomen, and although her pulse remained unchanged, I realized that I was dealing with the condition I dreaded all these years, namely, a rupture occurring in a tubal pregnancy while under examination in my office.

Treatment and Course.—The patient was at once placed in the recumbent position, and a hypodermic of morphin administered. Her pulse remained good and unchanged for some forty or fifty minutes. It was my intention, as soon as the shock subsided somewhat, to accompany her in an ambulance to the Polyclinic Hospital, situated some distance from my office; but instead of improving, her condition became alarming; her pulse grew constantly weaker, and in spite of stimulation she was rapidly sinking.

Realizing that there was no further time to be lost I phoned to Mount Sinai Hospital (eight blocks distant from my office) for an ambulance. The patient was taken at once to the operating-room, and expired just as the incision was made by one of the surgeons operating at the time and a two months' fetus extracted from the abdomen. Death occurred in less than two hours from time of rupture.

This tragic death made a profound impression on me, and suggested the question as to how many of the patients whom I had seen brought to the operating-table in a similar state of shock and collapse might have gone the way of this woman, had they not been subjected to immediate operation.

This case teaches a valuable lesson, inasmuch as it establishes beyond doubt the all-important fact, which is after all the crux of this controversy, that it is impossible for a practitioner or a specialist, unless he be possessed of second sight, to determine in advance from the signs, symptoms, and condition presented by a given case of tubal rupture or abortion, as to whether the patient may rally from the shock, or die pending an operation.

I had occasion to study a large number of patients in shock and collapse due to this affection, and yet there was not a single feature in this case, viewed in the light of my past experience, that should have led me to suspect that rupture would be followed so rapidly by a fatal issue. If I had any guide to go by, I would certainly not have temporized and wasted forty or fifty precious minutes, when, I am convinced, an operation at the earliest possible moment would have saved the patient's life. I must frankly confess that in this instance I had for the first time departed from my invariable rule of dispatching these cases with all haste to the operating-table, because I was somewhat encouraged by the claims of some prominent observers that internal hemorrhage very rarely kills. "Never again."

The following history of a patient operated on at Beth Israel Hospital, in December, 1902, which I previously reported,[2] tells a different story:

CASE 2.—*Patient.*—A woman, 29 years old, married nine years, had two children and two miscarriages. After amenorrhea of five weeks, patient began to have pain in the pelvis and uterine bleeding.

Operation.—On the day of admission to the hospital, she called at Dr. D. J. Hyman's office for treatment, and while waiting in the reception room, fainted and went into collapse. The doctor had her taken at once to the hospital where I was operating at the time. On admission her pulse was imperceptible, and the heart-sounds very faint; patient was unconscious. Without having her clothes removed, the patient was placed on the operating-table, her abdomen scrubbed and disinfected, and opened without anesthesia. The peritoneal cavity was found to be full of clots and fresh blood, the result of a ruptured right tubal pregnancy.

Course.—When regaining consciousness, some hours later, the patient was surprised to find herself in bed, and did not recall anything that transpired since she left the doctor's office. She made a rapid recovery, thanks to her quick transfer and immediate operation.

Case 2 is not exceptional. It is one of a large series of patients suffering from various degrees of shock or collapse on whom the immediate operation was performed. In no instance did the severity of the shock or collapse militate against undertaking the immediate operation; on the contrary, the greater the shock the more haste was employed in rushing the patient to the operating-table.

The technic has been practically identical in all operations. The abdominal route is invariably employed: The patient is placed flat on her back; the abdomen is prepared in the usual manner; previous vaginal examination determines the side affected; median incision is made; the entire hand is introduced into the abdominal cavity, and directed at once toward the affected side; the mass is grasped, enucleated, and drawn into the wound. By firmly grasping the outer border of the broad ligament, further hemorrhage will be checked. No attempt is made to wipe away the blood or clots before the gravid tube is delivered at the wound, the steps of the operation having been carried out by touch only; but previous to tying off the pedicle sufficient blood is wiped away with damp pads to expose the pedicle clearly to view. The operation is completed in the usual manner. Before closing the abdomen, it is my habit to mop out as much of the blood and clots as possible with damp gauze-pads.

When the patient is in extreme collapse, intravenous saline infusion is given simultaneously with opening the abdomen. The large majority of the patients begin to improve as soon as the anesthetic is applied, but if the patient's pulse does not improve materially before removal from the operating-table, an intravenous infusion is given.

The following detailed reports of Cases 3 and 4 illustrate the results obtained in deferring operation in ruptured cases:

CASE 3.—*Patient.*—S. S., aged 28, married. After amenorrhea of two and one-half months patient began to bleed and had colicky pains in left pelvic region. For several weeks she had a number of attacks of pain and fainting spells. One week before admission she had a severe attack of pain and went into shock, from which she partly rallied. During all this time she was under the care of a midwife, and was seen at different times by a number of physicians, two of whom, to my knowledge, advised operation. The advice was finally accepted when the patient was almost *in extremis*.

Operation and Course.—On admission to Beth Israel Hospital, July 19, 1909, patient was in condition of collapse; pulse was imperceptible; patient extremely blanched and weak. Laparotomy revealed a large quantity of dark clots and old blood, and a still bleeding ruptured right tube. Intravenous infusion was administered. The pulse greatly improved after operation, but the patient went into secondary collapse about twenty hours later, and expired in spite of active stimulation.

2. Am. Jour. Obst., 1908, lvii, No. 1.

The operation was delayed so long in one case that the patient's resistance and reserve strength were completely exhausted by the protracted and continuous bleeding and shock, and by the consequent severe vasomotor paralysis; as a result she did not respond to the usual stimulation, as did all of my other patients operated on during shock and collapse. I undertook the operation in spite of giving an almost fatal prognosis, in order to live up to the principle which I had laid down for myself in all these years: not to refuse operation to patients in this condition as long as they were alive.

I cite this case because it is a practical demonstration of the truth of what I said on the subject of delayed operation in tubal abortion or rupture, in my paper of four years ago;[2] and my experience since then amply justifies me in emphasizing (1) that the presence of blood in the peritoneal cavity is an important factor in the element of vasomotor paralysis and shock; (2) that the longer the patient is allowed to bleed from a rupture or abortion, the greater the depression, and the more profound is the shock, and this is regardless of the amount of blood lost. Likewise, the recuperative power of the patient after operation depends more on the duration of the hemorrhage and of the shock than on their severity. In my experience, the time that has elapsed since rupture and bleeding have occurred is a better guide to the rallying power of the patient than the character of the pulse and the intensity of the shock and anemia.

These clinical facts also coincide with the following observations made by Crile[3] in his experimental work: "A given amount of loss of blood when the animal has been already reduced by surgical shock caused more depression than an equal amount earlier, when the compensating vasomotor mechanism was more active," and again, "even though the loss of some blood did not at the time produce an appreciable effect, if these small losses were repeated, the animal the more readily succumbed to shock."

The syndrome which accompanies an internal hemorrhage ranges and merges from the stage of syncope to that of shock, and finally to the still more severe form of collapse, and depends largely on the duration of the condition. Hence, the earlier the hemorrhage is checked and the vasomotor disturbance arrested, the quicker will the patient rally and convalesce. Furthermore, I have found a greater tendency to secondary shock when the interval between rupture and operation was prolonged than when the operation was performed soon after rupture.

The above clinical observations which, in my opinion, substantially prove the fallacy of the theory of deferring operation in this condition, are in accord with the following statement by Adami:[4]

> Loss of blood is followed by a rapid fall in the specific gravity of that still remaining in circulation, and a similar rise in the specific gravity of the tissues. In other words, the actual or relative loss of blood in a great part leads to a protective passage of body-fluid into the blood-vessels tending to preserve the circulation. This loss of fluid on the part of the tissues explains the development of the symptoms of shock and collapse.

DEFERRED OPERATION IN A TERMINATED RUPTURED TUBAL PREGNANCY

Case 4.—*Patient.*—R. R., aged 40, married twenty-four years, had eleven children and one abortion; last child was 4 years old. Bleeding, with cramps and pain in lower abdomen, had been present for four weeks before admission; patient had two syncopal attacks one week before admission; also slight chills and fever. On admission to Beth Israel Hospital, May 24, 1908, temperature was 100.5; pulse 100; abdomen somewhat distended; slight rigidity on right side; small mass in right iliac fossa.

Examination.—Vaginal examination showed uterus slightly enlarged, but pelvis free. Two days after admission curettage confirmed diagnosis of terminated extra-uterine pregnancy, and expectant plan of treatment was decided on. From May 24 to June 5 temperature ranged from 100 to 103; pulse from 100 to 124, gradually growing weaker in quality. Pain in abdomen increased in severity; mass in right iliac fossa grew larger; there was restlessness and sleeplessness. On June 5 patient's condition became so grave that operative interference could no longer be delayed.

Operation.—This showed uterus, adnexa, omentum, appendix and intestines matted together, and several old infected blood-clots in peritoneal cavity. The right tube was found to be the seat of rupture. Intestines, and especially the cecum and appendix, were very much injected and extensively adherent. The right adnexa and appendix were removed. Drains were inserted. The condition of the patient was not materially affected by the operation, but she gradually grew weaker, and died on the sixth day after operation, from a low form of septic peritonitis.

In the other case of terminated tubal pregnancy the patient paid the penalty of procrastination; the case is the first and only one in all my experience that I have treated intentionally, though reluctantly, on the hibernating plan.

It was about that time that the pendulum began to swing toward the doctrine of delaying operation, especially in terminated and infected cases. The case presented marked abdominal symptoms and other features which seemed to justify a trial of the expectant plan of treatment. As chance would have it, the patient did not improve, but grew gradually worse, and after waiting twelve days it simply became a question of permitting her to die without an operation, or having her probably die in spite of one, and I chose the latter, regretting all the time that I took any chance at all — I use the word chance advisedly — by not operating on her when admitted.

While I admit that an infected terminated ruptured tubal pregnancy may run a favorable course and the patient improve pending an operation, or even recover after a delayed operation, I am just as firmly convinced that the indication for immediate operation is even more urgent in infected cases, whether terminated or otherwise, than in non-infected cases. In a number of operations I have found a complicating inflammatory condition in the same tube with the tubal pregnancy or in the opposite tube, and the patients have made an uninterrupted recovery.

It is obvious that infection complicating tubal pregnancy should be treated on the same surgical principles as infection in other parts of the body, viz., the focus of infection should be removed as soon as possible. In this connection I might add that blood-clots left in the peritoneal cavity are prone to become infected through the intestinal walls, and in order to avoid this possibility it is a good rule invariably to remove them by mopping with damp gauze pads when performing the immediate operation.

When I reported 110 cases of tubal pregnancy[2] four years ago, including many patients in shock and collapse, several of whom were unconscious, with no death in any of the cases of rupture, and only one death in a case without rupture — due to hemophilia — I offered

3. Crile: Surgical Shock, 1899, pp. 138 and 145.
4. Adami: Principles of Pathology, I, 585.

then what I considered the strongest proof in favor of immediate operation. Since then I have operated in ninety additional cases, about 85 per cent. of which were ruptured or abortions. The immediate operation was done in eighty-eight cases, with no death, which lends additional force to my contention for the immediate operation. The deferred operation was performed in two cases, which I have reported in detail above, and both patients died. In the first I was forced to undertake the operation after the patient had been treated for shock for about a week, and gave a fatal prognosis before operating. The second was an infected patient treated on the expectant plan because the case at first seemed to justify a trial of this method. In other words, the only two deaths I have to report after operation for rupture occurred in the very cases treated on the lines recommended by the champions of the deferred operation, and, in my opinion, present even a stronger argument in favor of the immediate operation than do all the recoveries following immediate operation.

SUMMARY

In 200 operations for tubal pregnancy of every variety there were three deaths: one death following *immediate operation* in an unruptured tubal pregnancy; one death following *deferred operation* for ruptured tubal pregnancy; and one death following *deferred operation* for terminated ruptured tubal pregnancy with infection. In other words, we have a record of *one death* in an unruptured case after *198 immediate operations*, and *two deaths* in *two deferred operations*.

In all immediate operations for ruptured tubal pregnancy there was no death. In two deferred operations for ruptured tubal pregnancy, both died. The percentages are as follows: Total number of operations 200, with three deaths, giving 1.5 per cent. death-rate; immediate operation (ruptured) over 150 cases, giving no death-rate; deferred operation (ruptured) two cases, giving 100 per cent. death-rate.

When we note the above figures and the striking contrast between the result of the immediate operation and that of the deferred operation, and also take into consideration the death before operation of the patient in whom a rupture occurred in my office, the conclusion is inevitable that the immediate operation is a safe, sane and absolute life-saving procedure in tragic cases of tubal pregnancy, and that the longer an operation is delayed the graver is the prognosis to the patient.

Time will not permit my taking up for consideration the relative morbidity, or the comparative advantages or disadvantages of the immediate and of the deferred operation.

I can only endorse the conclusions deduced by Dr. Emery Marvel of Atlantic City in his article on immediate operation.[5] He tabulates the ill effects of the delayed operation as follows:

Greater loss of blood.
Possible loss of life occasioned by hemorrhage.
Increased shock depression.
Recurrent hemorrhage producing worse condition than first.
Operation fraught with greater difficulties.
More extensive pathology.
Increased discomforts measured by time and intensity.
Crippled organs with deficient functions.
Protracted invalidism.

There is one feature, however, that especially impressed me and to which I wish to call attention; it is the rapid, smooth and uninterrupted convalescence, and the peculiar freedom from postoperative complications that attended all my operations for tubal pregnancy, whether ruptured or otherwise.

When I compare the postoperative course in my entire series of tubal pregnancy with that of my other abdominal operations, I have no hesitancy in saying that operation for tubal pregnancy is attended by no greater risk than opening the abdomen for other conditions; on the contrary, I am convinced that tubal pregnancy offers the least surgical risk of all abdominal affections.

I regard the operation for tubal pregnancy so free from risk that I feel perfectly justified in doing conservative surgery on the affected tube when it is feasible and possible, with the full knowledge that by so doing the patient is subjected to a possible recurrence. The following case is a good illustration.

CASE 5.—*Patient.*—L. R., aged 29, married nine years, has one child, 6 years old; was admitted to Beth Israel Hospital, June 14, 1911. Three days before admission patient was suddenly seized with severe abdominal cramps, and fainted. She was admitted in a condition of extreme shock; pulse was imperceptible; and she was immediately sent to operating-room.

First Operation.—Laparotomy disclosed abdomen filled with blood, result of ruptured tubal pregnancy on left side; pinhole perforation still bleeding. The left tube and ovary were removed. During the operation an intravenous infusion of 12,000 c.c. saline solution was given. Patient was discharged sixteen days after the operation.

Second Operation and Course.—Eight months later this patient was again admitted to Beth Israel Hospital (Feb. 15, 1912). On the day before admission, patient was seized with a severe attack of pain in lower right abdomen, felt faint, and vomited. On admission the temperature was 99.6; pulse 90; respiration 26. There was pain and tenderness in the right ovarian region. The uterus was pushed to the left by a soft cystic mass filling the right fornix. Laparotomy revealed free and clotted blood in abdominal cavity, the result of tubal abortion, with a six weeks' gravid sac protruding from the fimbriated extremity of the right tube. In spite of the possibility of recurrence the fimbriated end of the tube only was resected, and ovary left intact. The patient was discharged nine days after operation.

To quote from a recent paper by Dr. Charles A. Stillwagen,[6] of Pittsburgh, Pa., one of the advocates of deferred operation for ruptured tubal pregnancy, who says:

> As a matter of fact, many surgeons operating for ruptured tubal pregnancy, Deaver, Harris, Ladinski and others, report a low operative death-rate. Surgical advancement has made their results possible. But even if it were the rule for skilled operators in well-appointed hospitals to show the very best results in immediate operation, it would still be a very dangerous impression to be abroad, that all cases of tubal pregnancy must be rushed pell-mell to abdominal section.

In answer to this I wish to say that, while I appreciate the compliment this writer pays me, I lay no claims to any particular surgical advancement or special skill in these operations, for I have not changed in the slightest my technic or method since my earliest tubal pregnancy operations, seventeen years ago. But I do believe that the results I have been able to attain were due to my invariable rule to operate in these cases as soon as they could be rushed to the operating-table.

I have repeatedly urged that the first and best aid that can be rendered by the internist in ruptured tubal pregnancy is to make arrangements with all haste and dis-

5. Marvel, E.: Am. Jour. Obst., 1912, lxv, No. 1.

6. Stillwagen, A.: Am. Jour. Obst., 1912, lxv, No. 1.

patch for the transfer of the patient to the nearest hospital, after giving a hypodermic of morphin; and I am greatly indebted for the cooperation of the practitioners who, profiting by the teachings of myself and others, have recognized the urgent necessity of the immediate operation and have acted on this principle. The detailed plan of treatment elaborated by the advocates of deferred operation is very well and good, but after operation, and not before.

In my anxiety that no time be lost in the transfer to the operating-table of patients suffering from ruptured tubal pregnancy, I have, on a number of occasions, refused to see the patients at home when summoned in consultation by physicians, but have insisted that they be taken immediately to the hospital.

As an instance of practicing what one preaches, I will cite the following from a large list of similar cases:

CASE 6.—*Patient.*—R. P., married. Jan. 22, 1912, after amenorrhea of six weeks, at about 10 p. m., while at theater on the lower East Side, had several fainting spells, with pain on right side. She was prescribed for by a physician who was called in by the management, and sent home, in the upper part of the city (a distance of about six miles) in a taxicab. When seen by me with Dr. Charles Phillips, about three hours later, patient was in complete collapse; pallor was extreme, and pulse at times imperceptible at wrist.

Operation and Course.—Realizing the urgency of an immediate operation I advised her transfer to the nearest hospital, a few blocks away, instead of to one of the more distant hospitals with which I am connected. At the physician's earnest solicitation that I remain in charge of the case, I compromised by having her admitted, through the courtesy of Dr. S. Marx, to the Red Cross Hospital, a short distance from her residence. Without shaving, or any further preparation of the abdomen, except application of iodin, the operation was performed by Dr. Marx and myself. The abdominal cavity was filled with red blood; right tube was the seat of pregnancy, with rupture about 1 inch from fimbriated extremity; rupture was still bleeding. Infusion was given. Patient returned to bed with pulse of 120, full and strong. About six hours later, secondary shock: pulse over 140, feeble and thready, to guard against which, on account of it being a neglected case, I had cautioned the house staff at the time of operation. Under active stimulation pulse improved, and the patient entered on an uninterrupted convalescence.

From my added experience I can only reiterate what I said in my previous paper on ectopic gestation:[2] that it is my firm belief that the results obtained by me after immediate operation in extreme collapse support my contention that, no matter how profound the collapse of the patient, the urgent indication is to check the hemorrhage, and if the operation be performed with the ease and rapidity that is possible in the hands of specialists, the additional shock, if any, will be so slight that it cannot be held responsible for a single death.

Gynecologists do not stand alone in regarding shock as a contra-indication to operation, but general surgeons as well look on shock as a bugbear in connection with operations. Dr. Ellsworth Elliot, Jr., of New York, in his article on perforation of the stomach and duodenum,[7] calls attention to it in the following statement:

> It is well to emphasize the fact that shock, when present, is no contra-indication to immediate operation in the above conditions. This statement is again at variance with the more or less wide-spread belief that under such circumstances operation should be deferred until the shock has subsided. Every hour of delay in diagnosis, or of delay in operation after the diagnosis had been made decreases the chances of the patient's recovery.

7. Elliot, E.: Ann. Surg., 1912, lv, No. 4.

I would like to see the word "delay" entirely eliminated from the lexicon of treatment of tubal pregnancy, for while there may be a slight justification in postponing operation in a few isolated cases, the teaching and agitation of this doctrine of delay, which, I regret to say, is not generally understood or sufficiently analyzed, have exerted a most baneful influence by raising a false sense of security in the minds of internists who, in consequence, procrastinate with a condition that demands the most urgent surgical interference; and the inevitable result has been an increased mortality and morbidity in the treatment of tubal pregnancy.

I hope to see the indication for immediate operation for ruptured tubal pregnancy accepted as the rule; and that gynecologists and surgeons will unite in impressing on the men who see these cases first, the necessity and advantage of immediate operation, because it is on the promptness of their decision to refer cases of ruptured tubal pregnancy to a hospital for operation that the fate of these patients largely depends.

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ABSTRACT OF DISCUSSION

DR. BROOKS WELLS, New York: I have operated in only a little more than half of the number of cases Dr. Ladinski is able to report, including eight of serious shock from hemorrhage and have had no deaths following operation. I have seen two women bleed to death from ruptured ectopic and know of other unpublished cases. Naturally, my own inclination is to operate on all of these patients as soon as proper environment can be secured. It would seem that we should accept Dr. Ladinski's conclusions. You will agree that nearly all cases of ectopic pregnancy may be recognized by the physician in general practice before serious rupture has occurred and from the history of slight menstrual irregularity and unusual pelvic pain. In these cases the indication is plainly to operate as soon as a skilled surgeon and proper surroundings can be secured. Operation done before rupture or before serious bleeding is not ordinarily difficult and should be followed by almost no mortality. Delay for from one to several weeks so that the patient's general condition may improve means, in my experience, increased morbidity with added danger from adhesions or sepsis. Where the patient is in desperate collapse from sudden hemorrhage the question of procedure must always be largely influenced by the personal equation of the physician in charge. Hospital environment is desirable, yet immediate removal to hospital is often too dangerous to be allowed. Without adequate surgical training or skill it is undoubtedly safest to wait, as many of these patients recover from most desperate conditions while abdominal surgical intervention by the unskilled is too often attended by disaster. Yet the skilled surgeon who refuses operation because of alarming conditions cannot by so doing shift his responsibility in the event of the patient's death. My own rule in cases of dangerous collapse is to operate as soon as ready unless some improvement is shown during the time of waiting for necessary preparation. Keep the patient warm on the table, use light ether anesthesia, a moderate Trendelenburg position, get in quickly, tie off the tube *en masse*, scoop out only clots easily reached, close the abdomen, give hot water by rectum and expect the patient to get well. It is ideal to make the diagnosis and remove the cause before rupture has occurred. It is good surgery to operate in all cases as soon as proper environment and skill can be secured. In the absence of proper skill and environment the waiting policy will give the lowest death-rate.

DR. S. M. BRICKNER, New York: I endorse the position taken by Dr. Ladinski so far as the immediate operation in ruptured tubal pregnancy is concerned. If we had more diagnostic skill in the direction of differentiating the condition of the tubes in cases of tubal pregnancy, the majority of cases of tubal abortion could safely be left to themselves. They are

the cases in which eventually we have either a small hematocele or in which blood is free in the abdominal cavity and is quickly absorbed. In a series of 122 cases of tubal pregnancy of all varieties in our hospital, two patients died; both cases were ruptured tubal pregnancy. In one case the patient was brought into the hospital moribund, operated on without an anesthetic, and died on the table. In the other case an erroneous diagnosis of ordinary abortion was made. The patient was curetted by the house-surgeon and three hours afterward went into profound collapse, and when I saw her one hour later she was gasping. Although the abdomen was quickly opened and the vessels ligated, the patient died. I have had the opportunity of watching two patients in the ward with all the clinical symptoms of tubal pregnancy who, without doubt due to the repeated examinations made, started to bleed and went into collapse in three or four hours after admission. Both were operated on as soon as the symptoms of collapse and shock appeared. We have no hesitation in operating under these conditions. Six years ago, I quoted in this Section the dictum of Werth, who says that an unruptured tubal pregnancy must be regarded in the light of a malignant neoplasm and demands immediate operation. I endorse completely the attitude taken by Dr. Ladinski.

DR. WALTER P. MANTON, Detroit: I endorse Dr. Ladinski's attitude in this matter. This subject was fully discussed at the meeting of the American Gynecological Society a couple of years ago and I there stated my own belief in immediate operation. It is not always possible to operate on a patient within an hour or so after rupture takes place, but I believe that in all cases just as soon as a qualified surgeon can be secured or the patient can be taken to a hospital, in both unruptured and ruptured tubal pregnancy, operation should be done at once. Whether the bleeding comes from the ruptured tube or from the tubal ostium is unimportant; operation should be done as quickly as possible.

DR. L. J. LADINSKI, New York: With tubal abortion as with uterine abortion we cannot tell in advance whether we are dealing with a case of pending, incomplete or complete abortion. It is not only difficult to differentiate between tubal abortion and tubal pregnancy, but it is also difficult to diagnose the variety of abortion. The worst intra-abdominal hemorrhage I have seen was from a tubal abortion. I have pointed that out in a previous paper. This is because the hemorrhage from a tubal abortion may be slow and insidious, and the patient becomes somewhat accustomed to it and does not show the effects of it until she is practically collapsed, whereas the bleeding from a rupture is, as a rule, very rapid and the evidences are at once noticeable. I can only repeat that not only are the chances for the patients better by the immediate operation, both for ruptured and unruptured, and for tubal abortion, but I am firmly convinced that the mere agitation for delaying operation has undoubtedly cost many a life. In fact, the very patient in whom a rupture occurred in my office and whom I allowed to wait for about an hour, instead of having her transferred at once to the hospital, I believe would have been saved had I not been imbued with the idea that possibly there was some ground for the belief that patients do not die of an intra-abdominal hemorrhage. Up to that time I had very rarely seen a death from intra-abdominal hemorrhage due to tubal pregnancy. The cases of the two patients who died after delayed operations, which I reported, compared with the 197 cases of patients operated on promptly who recovered, emphasize the wisdom of immediate operation.

The Practice of Medicine as a Fine Art.—Both in diagnosis and in treatment, one skilled clinician of long experience may be, and often is, much more accurate when not using elaborate scientific methods than is another who is using them. The scientific physician in treating a case of pneumonia may pin his faith down entirely to the use of a vaccine, and perhaps deprecate the use of other methods; the more artistic physician may use the vaccine but will most certainly not rely on it only, but on many other means, some of which may seem trifles to the scientist.—Ernest S. Reynolds, in *British Medical Journal.*

DRAINAGE OF THE KIDNEY BY INCISION FOR BACILLUS COLI COMMUNIS INFECTION IN PREGNANT AND PARTURIENT PATIENTS

WITH REPORT OF CASES *

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Infection of the kidney during pregnancy by the *Bacillus coli communis* has been frequently brought to the attention of the profession, and the literature of the subject has become considerable. The limits of space and time forbid an extensive literary review of this subject.

Abundant clinical observation shows that the right kidney is most usually involved. The anatomic explanation for this lies in the relation of the right ureter to the intestine, and the comparatively easy access of the infective germ from the intestine to the pelvis of the kidney. Some observers have recognized ascending infection, the infective germ first gaining access to the bladder through the urethra and then passing upward along the ureter to the pelvis of the kidney. In all cases the *B. coli communis* is the principal agent of infection. Mixed infection with staphylococci or with streptococci may be present.

No predisposing cause has yet been clearly demonstrated for this complication. It has not been found more frequently in contracted pelvis, but is unquestionably most often seen in ill-nourished patients in whom the functions of the intestine are sluggishly performed and in whom there is chronic intestinal stasis.

The chief symptoms of the condition are indefinite pain in the right side of the dorsal region and in the right lower abdomen. It is often impossible to differentiate this pain from the pain of subacute appendicitis. As the infection becomes well developed the pain is more frequent, and in some cases chills develop. The patient's nutrition is manifestly at fault.

Examination of the urine shows acid reaction, more or less serum albumin, epithelium from the pelvis of the kidney, and abundant *B. coli communis.* The significant clinical points in the urinary findings are the acid reaction and the abundant presence of the infective germ. At operation on one of my patients the *B. coli communis* was found in blood taken from a diseased kidney.

The significant feature in diagnosis is the high leukocytosis. In one of my cases it was 29,000, and in a case reported by French[1] at Guy's Hospital the leukocytes were 25,000 per c.c. of blood. A pure culture of the *B. coli communis* can usually be obtained from the urine.

In thin patients with relaxed tissues the affected kidney can usually be distinctly palpated and is evidently enlarged.

In mild cases the disease tends to recovery if the patient's diet be limited to milk, and pure water be used abundantly. Rest and free action of the bowels are indispensable. Mild cases do not tend to abortion, and in the puerperal period mild cases do not commonly result in general septicemia.

When infection is overwhelming, and mixed infection is present, the kidney may be riddled with abscesses, and pyemia and septicemia develop. In pregnancy abortion

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* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at its Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. French: Brit. Med. Jour., May 2, 9 and 16, 1908.

follows, and in the puerperal period septicemia may develop.

The medical treatment of the condition consists in a differential diagnosis, between pyelonephritis from infection by the *B. coli communis* in the right kidney, and appendicitis. This diagnosis may be difficult and practically impossible. Fortunately, the treatment for both conditions, if mild, is practically the same. Rest in bed, a milk diet, and abundant use of pure water, with purgation, are sufficient. If the *B. coli communis* be obtained in pure culture from the urine, the use of hexamethylenamin is often beneficial.

When the disease does not yield to these measures, the obstetrician must remember the danger of the development of nephritic abscess. Drainage of the kidney must then be employed. This may be done by catheterizing the ureter and by irrigating the pelvis of the diseased kidney. If there is doubt as to which kidney is involved, catheterizing the ureter should give the desired information. The fluid injected may be salt solution or any of the less noxious antiseptics, in considerable dilution. The objection to this method of treatment lies in the fact that it is possible to add to the infection by this manipulation, that the drainage is but temporary, and the action of the antiseptic solution so applied is comparatively brief.

Drainage by nephrotomy or lumbar incision has the merit of enabling the operator to make a positive diagnosis and to apply surgical principles of treatment in a prompt and efficient manner. The kidney should be exposed by the usual lumbar incision, brought up to the surface of the wound, and several stitches of chromicized catgut passed through its capsule and through the edges of the wound to retain it in position. The kidney is then incised along its convex border and the finger passed through the kidney substance to the pelvis, when an opening large enough to permit free drainage should be made by the use of the finger. A gauze drain is then inserted to the pelvis of the kidney and carried out through the center of the wound. This is gradually removed, and if desired the kidney may be irrigated from the fistulous tract, which gradually closes.

The obstetrician may be unable to demonstrate the existence of pus in the fluid which comes from the kidney in this operation. The kidney is enlarged and hyperemic and the blood is so abundant that unless abscess be present a small quantity of pus may be overlooked. Cultures taken from the blood which comes from the kidney will demonstrate the presence of infection.

If the operator is in doubt regarding the condition of the appendix, appendectomy should be added to the operation. Unless drainage of the appendix site is necessary this wound should be completely closed after the removal of the appendix, and its presence does not complicate the patient's recovery.

CASE REPORTS

CASE 1.— R. M., aged 23; third pregnancy; ill-nourished; gave a history of an illness of over two weeks. She was pregnant about seven months. There had been continuous pain over the right abdomen, with vomiting and several chills. Pulse and temperature were considerably above normal, but high fever was absent. A leukocytosis of 26,600 was present. The urine was acid and swarming with the *B. coli communis*. The germ was obtained from the urine in pure culture. The left kidney could not be palpated, but as the patient was ill-nourished and her tissues relaxed, the right kidney could be distinctly outlined.

Medical Treatment.—Rest in bed, milk diet, hexamethylenamin, purgation, and the copious use of water, failed to mitigate the patient's sufferings. The advent of chills suggested the necessity for operation.

Operation.—Jan. 11, 1911, the right kidney was exposed by the usual lumbar incision. The organ was much enlarged and dark-bluish in color. Retention stitches of chromicized catgut were passed through the two extremities of the capsule and the kidney incised along its convex border. An abundant flow of dark blood followed. The finger of the gloved hand was then passed cautiously through the kidney substance to the pelvis and the opening dilated sufficiently to permit the ready introduction of a gauze drain. The blood taken from the kidney at the time of operation showed the presence of *B. coli communis*. The lumbar wound was then closed at its extremities, leaving the center open for drainage.

Appendectomy.—As no pus was visible, and as abscess could not be seen and the patient's pain had extended over the entire right abdomen, the appendix was then exposed by the usual incision and removed. It was somewhat enlarged and catarrhal, but otherwise normal. The patient improved immediately following the operation, the leukocytes diminishing to 10,000. On Feb. 5 following, when the kidney wound was almost closed, the patient came into spontaneous labor and gave birth to a female infant 46 cm. long, and weighing 5 pounds 8 ounces. Mother and child made an uninterrupted recovery and were discharged from the Maternity Department of the Jefferson Hospital in good condition.

CASE 2.—E. C., aged 21; in second pregnancy at about six months, was referred to the Maternity Department from the examining room of the General Hospital, having been sent by a physician who supposed she had typhoid fever. His diagnosis was based on moderate rise in pulse and temperature, a mild toxemia, and some slight disturbance of the intestine.

Examination.—The red blood cells were 4,500,000, leukocytes 20,000, color index 0.8 plus, hemoglobin 75 per cent. The urine was acid, containing abundant *B. coli communis* in pure culture. The patient's illness was of indefinite duration and she had been treated for typhoid fever for over a week before admission. Neither kidney could be palpated, and the patient's pain was so indefinite that it gave little information concerning her condition.

Operation.—At operation the right kidney had been so elevated by the uterus and its contents that it was brought to the surface of the wound with considerable difficulty. The kidney was enlarged and dark-bluish in color. It was anchored in the wound by stitches passed through the capsule, the convex surface of the kidney was incised, and the finger passed through the pelvis. A free discharge of dark blood mixed with a seropurulent fluid followed. A gauze drain was inserted and the appendix then removed through the usual incision. The appendix was postcecal but not adherent nor perforated. It was removed without difficulty and the wound closed. The patient made an uninterrupted recovery, the leukocytes speedily diminishing to 15,800 and the wound gradually closing. Between five and six weeks after the operation the patient was well, the leukocytes 10,600, and the wound healed. She was discharged as she preferred to be confined at home.

There are several points of practical interest connected with the subject of renal surgery in pregnancy. Pousson's interesting paper presented before the French Congress of Gynecologists in 1910,[2] gives a considerable collection of these operations. In sixty-six patients in whom nephrectomy had been done and who subsequently became pregnant, fifty-nine were delivered at term, most of them nursing their children, and one becoming a wet-nurse. Pinard removed a tuberculous kidney, the patient afterward passing through a normal pregnancy. In eight of Israel's cases of tuberculous kidney with nephrectomy, fifteen pregnancies subsequently developed uncomplicated, followed by normal labor. Hartmann reported 113 renal operations on women, thirty-five during pregnancy, and seventy-eight followed sooner or later by pregnancy. Among the thirty-five he included

2. Pousson: Ann. de gynéc. et d'obst., October, 1910, p. 674.

Cragin's vaginal nephrectomy for the removal of a displaced cystic kidney in the pelvis which was obstructing labor. Normal delivery occurred the next day. In Twyman's experience, in twenty-six nephrectomies during pregnancy, one patient died of eclampsia on the second day, the other had phlebitis before the nephrectomy. In the remaining twenty-four, pregnancy went to full term in twenty-two. In four out of five nephrectomies in pregnancy gestation was uninterrupted. The fifth patient died on the second day after premature labor. In one nephropexy and one incision into a perinephritic abscess during pregnancy, there was no premature delivery or other complication.

There is abundant evidence that the removal of one kidney does not make subsequent pregnancy impossible. Thus, in seventy cases a single kidney carried the patient through pregnancy, which was sometimes repeated. In three nephrectomies, one patient had miscarriage, one became pregnant twice going to full term, and one three times. It is also found that bilateral decapsulation does not prevent subsequent normal pregnancy and labor.

It is noticeable that in these cases interference with the uterus was followed by disastrous results.

In a recent extensive review of the subject Burnett[3] calls attention to an interesting point in diagnosis. When the infection is by *B. coli communis* only, the urine remains clear, acid in reaction, and free from ammoniacal odor, because this germ does not split up the urea into ammonia. If staphylococci and streptococci be present cystitis develops, the urine becomes alkaline, ammoniacal in odor, with mucus, lymph and pus cells.

Another interesting point in differential diagnosis lies in the fact that hematuria in these cases is rarely present. On the contrary, in pernicious toxemia of pregnancy hematuria is often present in severe cases. This condition may be mistaken for appendicitis, malaria, pleurisy, or the passage of a renal calculus.

In the treatment of this condition serum has been unsatisfactory, because the *B. coli communis* does not develop an antitoxin. Autogenous vaccines have not proved very valuable except in ameliorating the symptoms. This statement is borne out by the experience of French, who treated a patient after operation by vaccines prepared from cultures of the *B. coli communis* obtained from the patient's urine. The injections were made at intervals of about two weeks, the dose consisting of the products of 500,000,000 bacilli. The patient steadily improved, but the pyuria persisted.

The extreme rarity of tuberculosis of the kidney in pregnancy renders the confusing of this condition with *B. coli communis* infection very unlikely. At Guy's Hospital there has been no case of pregnancy with tuberculous kidney in the last twenty years.

Sondern[4] in eighteen cases found operation necessary in four. In his experience it was possible to rule out tuberculosis and gonorrhea by the study of the bacilli found in the urine.

CONCLUSION

This contribution to the literature of the subject is made with the hope of directing the attention of obstetricians to two points: first, that the existence of pregnancy does not forbid surgical treatment in this condition; second, that surgical treatment is indicated as soon as other measures fail to produce improvement; experience shows that drainage by nephrotomy is the safest for mother and child. This was brought forcibly to my mind by a recent case seen in the Jefferson Hospital in consultation with a surgical colleague.

The patient, a young primipara, had high temperature and repeated chills. Operation was urged, but declined, the patient subsequently giving birth to a dead child, and making a tedious recovery.

250 South Twenty-First Street.

3. Burnett: Jour. Obst. and Gynec. Brit. Emp., July and August, 1910.
4. Sondern: Bull. Lying-In Hosp., New York, 1909, No. 1.

ABSTRACT OF DISCUSSION

DR. CURTIS F. BURNAM, Baltimore: Dr. Davis has brought up a question which I have often wondered about, i. e., how these kidneys would close after doing nephrotomy with a pregnant uterus below. One case that I saw was unsatisfactory, as a permanent fistula persisted and the kidney was ultimately lost. We ought to distinguish clearly cases of pyelitis from those of pyelonephritis, and those that occur before the third month of pregnancy from those in the later months. We see a good many cases with pyelitis of pregnancy within the first three months and when it is a pyelitis alone, often the only symptom is a continuous fever resembling typhoid, and the blood instead of showing increased leukocytosis shows normal. Often there is little pus in the urine, and a casual examination of the urine would lead one to discard the belief that there was infection in the kidney. Sometimes these cases have a malaria-like fever. In the early cases the plan of treatment which we have followed has been to put the patients on a milk diet, abundant water and rest in bed, then to give the only urinary antiseptic which I believe is capable of destroying bacteria—hexamethylenamin. At the April meeting of the American Urological Society I reported the results of my experiments, showing that its virtue in the urine is dependent on the liberation of free formaldehyd, and that when this liberation does not take place it is useless to continue the drug. The infection is sometimes bilateral. It has been our custom in the more resistant cases to catheterize the kidney daily or every other day, and irrigate with formaldehyd 1:2,000 solution. When this fails to relieve, the next step is to induce miscarriage. I can conceive of how difficult and dangerous the induction of labor must be in the later months, but I have seen no ill results from induction in the early months. The hexamethylenamin which may have been ineffectual beforehand immediately clears the cases up.

DR. C. S. BACON, Chicago: I had accepted the rule as well established that such patients should not be operated on because, as a rule, they improve and become, practically speaking, well after labor, and the cases are very rarely so serious as to demand any operation. I should like to ask what the final result of the operation is. Practically all the cases are chronic infections. I believe that the infection frequently starts in infancy as a colon-bacillus infection ascending from the vulva.

DR. H. D. FURNISS, New York: In the literature of many of these cases of pyelitis in pregnancy there has been a history of antecedent cystitis in most. In the statistics of twenty-five patients who had died from other causes but who had cystitis (Sugimura), there was involvement of the lower end of the ureter that caused a certain amount of obstruction, and this inflammation extended through the lymphatics. In the treatment of these cases of pyelitis the best results are from ureteral catheterization. In a number simply the passing of the catheter relieves. If this fails, irrigation is advisable. In addition to that it is necessary to look after the bladder condition to relieve the hyperemia and obstruction. If more attention were paid to vesical irritation in early pregnancy in cystitis, we would avoid cases of subsequent, severe infection. The cases that Dr. Davis has cited of nephrotomy with discharge for a month or two afterward speaks for some obstruction lower down, as the kidney would close soon if there is good drainage into the bladder through the ureter. I think in all these cases there will be found some obstruction in the lower end of the ureter, and in the majority of cases it is of inflammatory origin.

DR. WILLIAM LINDER, Brooklyn: I want to call attention to a condition of unilateral infection of the kidney of hematogenous origin occurring in pregnant women. The condition

is one of exceptional interest and, among other things, must be differentiated from pyelitis of pregnancy. One is an ascending, the other a descending or hematogenous infection caused, in the vast majority of cases, by the colon bacillus. The lesion is cortical, consisting of numerous miliary abscesses of the kidney underneath the capsule. The onset is acute and the condition must be differentiated from an upper abdominal condition, as cholecystitis, perforated gastric or duodenal ulcer. There is extreme tenderness at the corresponding costovertebral angle, sudden rise in temperature, nausea and vomiting, and upper right rectus rigidity. Microscopically, one finds a few white blood-cells and a few red blood-cells, differing from pyelitis, in which there is considerable pus found under the microscope. One patient had frank hematuria followed by anuria in twenty-four hours. The patients were all treated medically for several days without improvement. Nephrectomy is the only cure. In six consecutive cases, I found the lesions so extensive that nephrectomy seemed the only rational procedure. In four cases the lower pole was involved and here a partial nephrectomy was sufficient. In two cases the capsule of the kidney was stripped and enveloped in iodoform gauze for drainage. In not one case was pregnancy interrupted and all the twleve patients recovered.

DR. EDWARD P. DAVIS, Philadelphia: In answer to Dr. Bacon's question; the urine became normal and the patients got well. There was no evidence of abnormal position or condition of the kidney. There was no pain on palpation. Regarding the question of cystitis in these cases; when there is a cystitis there is a mixed infection, with alkaline urine containing pus, and these phenomena were absent. The reason the wounds did not close quickly was that we did not let them close. We repacked and irrigated, using as an index the leukocytosis, condition of the urine and the patient's pulse and temperature.

THE OCCURRENCE OF GENERAL PARALYSIS IN WOMEN *

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My desire is to draw attention to the occurrence of general paralysis in women and to present the results in one of the New York state hospitals from that standpoint.

For years it has been stated that this disease was much more common in men, the ratio being variously given as from 1 to 4 to 1 to 7, and the percentage from 3 to 6. It is our contention that general paralysis is nearly, if not quite, as common in women as in men, especially in the city, and I shall endeavor to point out how and why we arrived at this radical view. Most of the work has been done in the past three years, but the conclusions are drawn from a period of four years, during which time 2,800 women have been admitted and 639 lumbar punctures done.

If we go back over the annual reports of the New York State Commission in Lunacy, beginning, say, with the fiscal year of 1907, we find that the occurrence in women is given as about 6 per cent., and no change is apparent until the fiscal year 1909 and 1910, when we find the figure has risen to 8.4 per cent. On further analysis of this report, however, we find the only hospital in the state reporting any material increase, is the state hospital at Central Islip. In the Central Islip reports, we find for the year ending Sept. 30, 1908, that the figure is 6.2 per cent.; for 1909, it is 13.4 per cent.; for 1910, it is 20.4 per cent.; and although the final figure for the last fiscal year is not yet at hand, it will be in the neighborhood of 20 per cent., i. e., there was a rapid increase over a period of two years; since then the figure has remained about stationary at 20 per cent. Incidentally, there has also been an increase in the cases diagnosed cerebral syphilis and psychoses accompanying nervous diseases; the report for 1908 shows 0.5 per cent. in this organic group, whereas in 1910 it is 2 per cent., i. e., the increase of general paralysis has not been by changes of diagnosis in the organic group, but has been essentially from the so-called functional groups.

In October, 1909, at an interhospital conference at Ward's Island, New York City,[1] I referred to the increase at Central Islip, and in Dr. Smith's annual report for the year 1910[2] will be found the following: "I am strongly of the opinion that general paralysis is far more frequent in women than has hitherto been believed. To this end, nearly all patients of foreign tongue are tested in their own language for speech and writing defects. Our investigations have shown that any form of mental complex can be present in general paralysis." These two citations, so far as I know, represent the first assertions that the percentage of general paralysis in the female could in any way approximate the percentage in the male.

It has long been accepted as a fact that general paralysis is much more common in cities than in the country districts. A very careful review of insanity in Orange County, N. Y., by Dr. Woodman,[3] shows that 75 per cent. of the paretics were from the three small cities of that county. Our admissions are almost exclusively from New York City and a certain excess over the rest of the state was expected; we found, however, many diagnostic difficulties. Our admissions represent the lowest element of city life and the percentage of foreign-born is very high with the consequent large numbers who do not understand or speak English.

For example, some time ago a fiscal year with 745 female admissions was reviewed, and it was found that 63 per cent. of the patients were foreign-born, 40 per cent. of whom had been ten years or less in the country.

When we recall the important symptoms of general paralysis, we find, in prominent positions, speech and writing on the physical side and memory on the mental. One can, therefore, readily see the difficulties in diagnosis on an admission service showing such a high percentage of foreign-born; of importance also is the large percentage of illiterates. The development of the psychosis is also of great diagnostic value. Many of our patients are never visited; many have no friends. They are often living apart from their relatives, and their visitors, when they come, either because of lack of knowledge, or as is perhaps more often the case, because of their own ignorance and poor observing powers, give us an incorrect account. There is also a great deal of intentional deceit. A patient presenting an hallucinosis, a delusional system, a depression, or any one of the various complexes, naturally directs our attention to his more prominent symptoms, his visitors do the same, and the finer changes in conduct, moral sense, judgment, reasoning, etc., which are often prominent early symptoms in the educated or in those holding responsible positions, are either not shown by our class of patients or are not noted by their friends and relatives. The same applies to memory; in the humdrum existences of

* Read before the New York Neurological Society, May 7, 1912.

1. State Hospital Bulletin, March, 1910, ii, No. 4, p. 789.
2. Annual Report of the Central Islip State Hospital, 1909-10, p. 8.
3. State Hospitals Bulletin, December, 1910, iii, No. 3, p. 321.

such persons time relations are often lost normally. Then it is hard to gauge the former educational, emotional and other levels of the patient, i. e., to tell if they are deteriorating or not.

Therefore, in the investigation of our cases, we have come to lay great stress on any neurologic sign, on atypical mental pictures and on memory defects.

To refer again to the superintendent's report and to the efforts that are made to examine for speech and writing difficulties, it has been our custom to call freely on interpreters and to endeavor in all cases to establish whether or not the speech and writing are abnormal, regardless of the mental complex. I have perhaps been unusually fortunate in having available the services of several reliable interpreters.

The difficulties, some of which I have enumerated, gradually led to the increased use of lumbar puncture, and the presence of even a few suggestive physical or mental signs became sufficient to justify a puncture. Lately, of course, the Wassermann findings have been given their place in the complex. It was not until 1908 that lumbar puncture was taken up by us to any degree. During that year there were, on the female reception service, about thirty punctures, and you will recall that the percentage of general paralysis that year was 6.2. There were ninety-five punctures in 1909, 181 in 1910 and 192 in 1911. Of course, numerous patients were punctured more than once but such repeated punctures are not included in the above figures.

To review, we see thirty punctures in 1908 with 6 per cent. of paresis, ninety-five punctures in 1909 with 13 per cent. of paresis, 181 punctures in 1910 with 20 per cent., 192 punctures in 1911 with 20 per cent. It is also interesting to note that of 233 clearly positive punctures on which I have Wassermann reports for both blood and spinal fluid, the Wassermann reaction was positive in the blood-serum, or in the spinal fluid in 204, or 87.5 per cent. I do not, however, wish at present to go any further into the discussion of lumbar puncture or the Wassermann reaction, but to go back to the superintendent's report and to the statement that any form of mental complex can be present in general paralysis. As illustrations I would like to quote the following cases.

CASE 1.—Illustrating the Korsakoff complex: The patient, K. N., was a widow, aged 41. Alcoholism was given in the commitment paper as the etiology; commitment also reported the presence of hallucinations of sight and hearing, mistakes in identity, "rambling talk and fabrication in the manner of a chronic intoxication psychosis. There was marked tenderness along the deep nerve trunks of both upper and lower extremities." These same mental features were demonstrated after commitment but physically the patient showed exaggerated reflexes; Romberg sign was present, with defective speech and tremors. Lumbar puncture and the Wassermann were positive. The patient died ten days after admission and the diagnosis of general paralysis was confirmed post mortem.

CASE 2.—Illustrating an excited manic phase: M. H., a widow, aged 36, was found on Broadway in a highly elated state, partially disrobed, giving exhibitions of fancy dancing. The commitment reports constant excitement with elation, singing and shouting. The initial mental examination showed her to be in an excited elated state, very talkative, distractible to things heard and distinctly flighty, confused and partially disoriented. Blue suggested, she remarked: "Yes I am true blue—I am American-born—my three husbands is American-born too—my mother was true blue too—she was on the stage—I have been on the stage too—since I am 5 years old—I am going on the Hippodrome—$500 a week—it is a good thing. I have good lungs—you have to holler in New York to get anything." Peaches suggested, she remarked: "Champagne—I would like a drink—whisky if nothing else—have you got any in your hip pocket?" Physical examination was very difficult owing to the excitement. The pupils did not react very well. The deep reflexes were increased but a lumbar puncture was not done and the patient was transferred to a disturbed ward. She improved, became quiet and orderly, developed insight and requested her discharge. After three months, however, there was a relapse. She failed rapidly and died seven months after her admission. The diagnosis of general paralysis was made post mortem.

CASE 3.—Illustrating other phases of manic depressive: A. B., German, married woman, aged 37, had had, approximately seven years ago, an excited phase of short duration. December, 1909, following a suicidal attempt, she was admitted to Central Islip State Hospital. No neurologic signs were made out. The patient was depressed and dazed; her replies were slow and delayed. She was disoriented and confused. After two weeks, she began to show some distractibility but continued bewildered; she complained that things seemed changed. After another two weeks, well-marked improvement was apparent. She seemed to make a good recovery and was discharged two months after admission with the diagnosis of manic depressive. One year and six months later the patient was readmitted, this time in a very excited condition, showing marked distractibility and flightiness. Shown money, she remarked: "Oh—what you got this time—an English piece—what is it, Canada—I can't read it without my glasses—this English—no—what do you want to test me for—oh a quarter—oh listen you don't want to give me money after all you done for me—well Dr. M. I suppose you want to know it of me again—I—we moved—well I was four weeks in a boarding-house—you know Mr. B. sold everything and he got a regular loafer—sold the furniture—he got $180 for a $700 flat—he works so hard—you know, doctor, he was married before," etc. Physically, however, there were marked speech and writing defects. The patient was tremulous and the deep reflexes were exaggerated. There was at first some improvement but she gradually failed, became bed-ridden, very ataxic, partially paralyzed and died one year and nine months after the second admission. The slide from the lumbar puncture showed an uncountable number of cells; the Wassermann was positive in both blood-serum and spinal fluid. The diagnosis of general paralysis was confirmed by autopsy.

CASE 4.—Illustrating a præcox complex: C. S., a single, temperate, negro woman, aged 37, was admitted to Central Islip in 1904. Duration prior to admission was given as one and one-half years. The patient at that time described hallucinations of hearing, taste and common sensation. She thought she was being followed by a white man who threw electric currents on her and attempted to poison her because of jealousy. Her persecutory ideas were fairly well systematized but she was quiet; she was emotionally inconsistent. Her memory was good. For some months she sat about, most of the time indifferent and apathetic, occasionally a little depressed. She took no interest in the ward happenings. Later, in 1904, the patient began to work and she seemed not to have any new hallucinatory experiences; her former ideas were retained, however. She remained the same for about two years and was one of the industrious ward workers. She then at times showed elation, again irritability. She was suspicious, gradually became more silly and noisy but continued a good worker. During all these years she was regarded as a case of dementia præcox, slowly deteriorating. Finally her history was accidentally reviewed and it was noted that the deep reflexes were not obtained on admission. This led to the making of a new neurologic status, which showed pupillary reaction to light to be slow and limited; at times there was a rotary nystagmus; the knee-jerks were much exaggerated; the other deep reflexes were normal; there were slight deviation of the tongue to the right, twitchings about the corners of the lips, fine tremors of the tongue, closed eyelids and outspread fingers. Speech was fairly good, writing irregular but education limited. The lumbar puncture and Wassermann reaction were both positive.

It may appear to some that I have laid too much stress on lumbar puncture, but I do not want to be

understood as saying that lumbar puncture or the Wassermann reaction, or both, are by themselves sufficient for the diagnosis of general paralysis; they are only two points in the diagnosis — two very important points — but there must be other neurologic and mental signs; the case must be reviewed in its entirety. The actual pleocytosis of the spinal fluid has not been of so much value *per se* as it has been in directing our attention to the probability of an organic basis and thereby inciting us to more careful physical and mental examinations, they in turn resulting in our rapid and marked percentage increase.

THE DIAGNOSIS OF DIVERTICULITIS OF THE LARGE BOWEL

A CLINICAL REVIEW OF TWENTY-SEVEN CASES*

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Our earlier experience at St. Mary's Hospital with diverticulitis of the large bowel has been reported in former articles.[1] The clinical similarity of diverticulitis and carcinoma has been emphasized. The condition has been placed clearly on a definite pathologic basis, and the possibility of the development of carcinoma on diverticulitis has been demonstrated. A more detailed analysis of the symptoms and the physical findings in a group of personally observed cases has not, however, been made, and it is with the idea of determining whether or not a more or less definite clinical picture presents itself that this review is undertaken.

From Jan. 1, 1902, to Jan. 1, 1912, twenty-seven operations for diverticulitis of the large bowel were performed at St. Mary's Hospital, Mayo Clinic, and the cases were studied clinically and pathologically. This number includes only those cases in which the operation was done primarily for this condition. One of them has been previously reported by Graves[2] and eight by my associates and myself.[1] The entire group has been reviewed from an anatomic standpoint by McGrath,[3] and the reader is referred to his paper for the details of the pathologic diagnosis. In four additional cases diverticula with slight pathologic change were found as a secondary condition, and in one other case an anastomosis was made subsequent to a resection for diverticulitis of the sigmoid elsewhere. Moreover, in seven instances a condition suggesting diverticulitis was found at operation, but diverticula could not be demonstrated positively. In all, then, thirty-nine cases have been observed which were either positively proved to be diverticulitis or in which this condition was strongly suspected at operation.

Of the twenty-seven cases which come directly under our consideration, twenty-two were in the sigmoid or the sigmoid and descending colon, while two occurred in the rectum, one in the transverse colon near the hepatic flexure, one at the hepatic flexure, and one at the anal ring. Carcinomatous degeneration had taken place in five of the twenty-two specimens from the sigmoid. The remaining seventeen cases of simple inflammatory lesion occurring in the sigmoid constitute the most important group for a consideration of the clinical manifestations which may differentiate the condition and assist us in arriving at a clinical diagnosis, and these will therefore be considered first. During the same period of time there were 120 operations for carcinoma of the sigmoid. The relative frequency of diverticulitis and carcinoma is, therefore, as one to seven.

SYMPTOMATOLOGY IN NON-MALIGNANT LESION OF THE SIGMOID

Preoperative Diagnoses.—Only three of the seventeen cases were diagnosed as carcinoma. From a clinical standpoint it was thought that the rest might be inflammatory. One was diagnosed as acute appendicitis; in this case the appendix was in reality inflamed, but the abscess was secondary to a perforating diverticulitis of the sigmoid. Four of the patients, all women, presented pelvic tumors and these were in every instance believed to be inflammatory clinically. In them bowel symptoms were absent except for severe constipation which is so common a complaint in women especially with pelvic disease. Two cases were diagnosed simply as "tumors of the sigmoid" and this implied a doubt as to their malignancy. In seven instances diverticulitis was recorded in the clinical history as the diagnosis of preference, though it is true that in one of these the diagnosis had been made pathologically at a former operation elsewhere. The point for emphasis, however, is this: that there must have been something in the clinical picture which in all cases save three led the physician to doubt in some measure the existence of malignancy.

Age.—In this group of seventeen the youngest patient was 40 years of age and the oldest 73. The average age was a little less than 54 years. There were five between 40 and 49 years, eight between 50 and 59, three between 60 and 69, and one was over 70. The time of greatest frequency was from 45 to 60 years, nine, or more than half, occurring in this period.

Sex.—Five patients were females and twelve males.

Occupation.—This is of fraternal interest only in that three of the patients were surgeons.

Weight.—In general, the type of patient was uniform. An inclination to at least an "enviable" obesity was noted. Even though the patients were neither tall nor heavy, the ratio of weight to height was increased. In seven instances the weight was accurately noted and its average was 180 pounds. Three more were described as stout. Only one patient weighed less than 150 pounds, and, though short of stature, was not lacking in a suggestion of abdominal rotundity.

Nutrition.—In all but three instances the nutrition was noted. It was either good or excellent. By this it is meant that the patients were well nourished and of sound flesh and good color. The loss of weight varied from 5 to 30 pounds and averaged less than 10 pounds, and those showing marked loss of weight were originally very heavy.

Pain.—Fourteen of the seventeen patients gave a history of abdominal pain of considerable severity, two of very slight pain, and one of a sense of uneasiness, distress and gas in the region of the navel and across the lower abdomen. In eight the pain was crampy in character and of varying severity; in seven it was spoken of as an ache and differently described as dull or deep or as a distress or pressure, while in two tenderness only was complained of. Nine, or a majority of the patients,

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* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. Mayo, Wilson and Giffin: Surg., Gynec. and Obst., July, 1907. Wilson and Giffin: Am. Jour. Med. Sc., November, 1909. Wilson: Ann. Surg., February, 1911. Giffin: Ann. Surg., April, 1911.
2. Graves: Boston Med. and Surg. Jour., March 16, 1911.
3. McGrath: Surg., Gynec. and Obst., June, 1912.

gave a history of very definite localization to the course of the descending colon and sigmoid flexure at various times. In eight of the cases, however, the pain was never thought by the patient to localize itself definitely in the left lower quadrant but was referred to the lower abdomen, though examination invariably demonstrated that the tenderness was definitely in the left iliac fossa. All of the females, five in number, and two males gave a history of pelvic pain also. In these seven the mass was found to be adherent in the pelvis, and in one it was partially intussuscepted into the rectum.

The total duration of abdominal pain varied from twenty days to five, eight and twelve years. In this great variability in the length of the history of pain the condition resembles other inflammatory lesions of the abdomen. In ten, or a majority of the cases, the total duration of abdominal pain was longer than one year. In two it was less than one month; in five less than a year.

In ten instances attacks of low abdominal colic had occurred and were of moderate severity in all but two; in these they were extreme. Seven had had no attacks, and the complaint was of a more nearly constant character. In those cases having attacks of pain, the duration of the attack varied from a few hours to a few days, most of the attacks lasting from two to four days.

In eight instances a history of abdominal pain preceded the discovery of a mass by periods varying from three months to twelve years. In five of these the period was longer than one year and in four longer than two years. If it can be determined with a reasonable amount of certainty that there is a long history of abdominal pain, especially occurring in attacks and with definite localization, this may be regarded as evidence in favor of a diagnosis of inflammatory lesion. If, in addition to this, there is a history of the previous formation of a mass and its subsequent disappearance the diagnosis is strongly confirmed. One of our patients gave a history of having noted a mass with an attack eight years previously and this had disappeared.

Vomiting, Diarrhea and Constipation.—Vomiting was not an important symptom. It occurred in three cases during attacks of colicky pain. Similarly, diarrhea was noted twice and then for a few days only at any one time. Constipation was complained of in a majority of the cases and was of more than moderate severity in nine of the seventeen. In eight of these it seemed to amount to a chronic obstruction from the clinical standpoint. Pathologically, eight showed evidence of moderate or marked narrowing of the bowel; five a slight narrowing. No instance of acute obstruction was seen.

Manual Examination.—In all cases a mass could be felt in the left lower quadrant or in the pelvis. In males the bimanual examination by rectum enables one to obtain a very clear idea of the size and outlines of the tumor. In women the left pelvic mass was a constant finding and in one case it was adherent low in the culdesac.

Blood Count and Temperature.—Leukocytosis might be considered as evidence in favor of diverticulitis. In three cases only was the leukocyte count recorded. It was 13,000, 14,000 and 20,000. In eight cases a reasonably accurate estimate of the fever during attacks of abdominal pain could be obtained from the patient. It varied from 99.5 to 104.

Bladder Examination.—In three instances only were vesical symptoms noted. One patient had complained of frequency and tenesmus for two years. Feces and gas had been passed by urethra for one year. The cystoscopic examination revealed two fistulas in the roof of the bladder which, from their appearance, seemed to be inflammatory. They were neither rigid nor indurated. This evidence helped materially in making a correct diagnosis of the condition. The other two patients complained merely of difficulty in starting the flow or of imperfect control.

Rectal Examination.—The proctoscopic examination was negative in all cases of simple inflammatory lesion save one in which the tumor had become partially intussuscepted into the rectum. The instrument was inserted from 6 to 15 inches in seven of the cases. The fact that pathologically there is no ulceration within the bowel in most of the specimens makes it unlikely that definite changes can be recognized even when one is able to insert the proctoscope sufficiently far. *X*-ray plates of the colon after the injection of bismuth from below were negative in two cases.

Blood in the Stools.—A fact of the greatest importance in the differentiation of diverticulitis of the sigmoid from carcinoma seems to be a history of the absence of the frequent passage of macroscopic blood and bloody mucus in the stools. The occurrence of bleeding and its constancy in carcinoma are so striking that more emphasis than otherwise may be placed on its absence in diverticulitis. Carcinoma is essentially a mucosal involvement, whereas the most constant process in these cases is extramucosal, a true peridiverticulitis. Of the seventeen cases reviewed, one only gave a history of macroscopic blood and in this instance there was a partial intussusception of the sigmoid into the rectum which alone would satisfactorily account for the variation.

The preceding discussion refers to the group of seventeen cases of non-malignant lesion of the sigmoid. The remaining five cases of diverticula of the sigmoid showed carcinomatous degeneration and gave a history of abdominal pain for nine months, one year, four, five and twelve years, respectively. Three of the group gave a long history, suggesting the possibility of a preceding inflammatory lesion. The frequent passage of macroscopic blood occurred in all but one of the five cases showing malignancy; in this one there was marked chronic obstruction.

In the two cases in the colon near the hepatic flexure the clinical histories were in no way definite. One was carcinomatous. The two cases in the rectum gave symptoms and findings suggesting carcinoma. One specimen on pathologic examination did not show carcinomatous degeneration. Here again the patient having a simple peridiverticulitis presented a mass which was very hard and adherent and gave no history of the passage of macroscopic blood, while the duration of the symptoms was three years. The patient having a carcinomatous lesion gave a seven months' total length of history with the passage of blood during this period.

The one case of diverticulitis of the anal ring was clinically in all respects similar to anal fistula.

Five of the twenty-seven patients died, one of these of cerebral hemorrhage forty days after operation, and another of nephritis on the twenty-first day (autopsy). The direct mortality was therefore three, or approximately 11 per cent.

COMPARISON WITH CASES REPORTED

A review of the literature has been made for the purpose of comparing the clinical data obtained with our

own observations. A satisfactory description of diverticula demonstrated at operation or in the surgical or post-mortem specimen in addition to a clinical history was essential in order to make the review of definite value. These requirements were not met by most of the reports and consequently it was possible to obtain only thirty-six cases for tabulation, and in most of these the clinical data were not complete. The age of the patient, the character of the pain, the nutrition, and the demonstration of a mass correspond very closely to the findings in our own series. Twenty-four of the thirty-six patients were between 45 and 60 years of age. Six instances of acute perforation with general peritonitis occurred. In twenty-seven of the remaining thirty, a mass in the left iliac fossa was demonstrated clinically. In only three of the thirty-six was a history of macroscopic blood in the stools noted. In three it was definitely stated that no blood had been seen, and it is likely that so important a point would generally be recorded if positive.

Similarly, for purposes of comparison, 100 consecutive histories of carcinoma of the sigmoid from our own files were reviewed. Of this number seventy-four gave the frequent passage of blood and mucus in the stools as a most prominent and constant symptom; in seventeen no definite statement was made, while in nine, with severe obstruction, it was stated positively that blood and mucus had not been seen.

SUMMARY

In the light of these findings, then, it would seem that a probable clinical diagnosis of diverticulitis of the sigmoid may be made in certain cases. Given a patient with a tumor of the sigmoid, the points in the evidence which would favor a diagnosis of the chronic proliferative type of diverticulitis are as follows: (1) the absence of those shadows of malignancy in the general picture; (2) a tendency to obesity and the maintenance of good nutrition; (3) a *long* history of attacks of low abdominal pain localizing in the left lower quadrant; (4) a history of the former formation of a mass and its subsequent disappearance; (5) a failure to obtain a more or less continuous history of the frequent passage of macroscopic blood in the stools; (6) the demonstration of vesical fistulas which, on cystoscopic examination, appear to be inflammatory, and (7) the failure to demonstrate malignancy positively by sigmoidoscopic examination.

In carcinoma of the lower bowel there is usually an early loss of flesh. Pain is not a prominent feature until obstruction advances, and the mass is often found before pain has been complained of at all. Tenderness to pressure is a late finding. The relative frequency must also be kept in mind. In our experience carcinoma of the sigmoid has been only seven times as frequent as diverticulitis.

The other inflammatory forms of perisigmoiditis cannot be positively differentiated. A diagnosis of appendicitis in cases of transposition of the viscera should not be difficult. If non-rotation of the colon exist, a radiographic or fluoroscopic examination after a bismuth meal would be necessary. It must not be forgotten that a pelvic tumor may be a sigmoidal tumor and the possibility of diverticulitis is to be considered. Pelvic inflammatory disease may be closely simulated. In fact, diverticulitis should be carefully considered in the diagnosis of all tumors of the left lower abdominal quadrant and of the pelvis.

NOTE.—I am indebted to Dr. Alexander Archibald for assistance in the tabulation of histories.

ABSTRACT OF DISCUSSION

DR. ALFRED STENGEL, Philadelphia: I think that the condition described is more common than is generally thought. I remember a patient from Philadelphia who was operated on in my presence by one of the Mayos in Rochester, Minn. Since that time I have seen at least half a dozen cases. The possibility of diagnoses in these cases I think should be more carefully considered. The case which led to the first publication by Dr. Mayo and his assistants showed the difficulty in making a diagnosis of cancer of the sigmoid; there was found a tumor in the region of the sigmoid. The onset of the trouble was very acute and followed after a condition of perfect health. There was an absence of usual conditions; there was no blood or mucus in the stools. There was sufficient evidence, however, to arouse a doubt as to the presence of cancer, notwithstanding the age of the patient and the presence of a tumor.

Operations have been performed on patients who presented a definite tumor and there has been found only a diverticulum filled with fecal matter, and sometimes an inflammatory mass. The mucous membrane itself shows no ulceration or any surface lesions. I have no doubt that many of these cases go on to abscess formation or to a spontaneous discharge of pus from the bowel. I have in mind a case that was under Dr. Deaver's care in Philadelphia. A man was seized with symptoms, especially pain in the left lower quadrant of the abdomen, at which point a mass developed. The patient apparently made a good recovery after the discharge of pus from the bowel. This is not a proved case, but taken in conjunction with what subsequently arose, it teaches that we should not temporize with regard to any surgical procedure; these cases are very formidable. In many cases there is required a removal of a large portion of the sigmoid flexure or the descending colon, and these are not trivial operations by any means. One of my patients who was operated on, showed a diverticulitis at necropsy.

THE TREATMENT OF PULMONARY TUBERCULOSIS BY COMPRESSION OF THE LUNG *

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Some of the foremost specialists in Europe are treating pulmonary tuberculosis by injecting nitrogen into the pleural cavity until sufficient pressure is obtained to drive the lung up into the smallest possible mass. The lung is then held well compressed by the nitrogen until it heals, when the nitrogen is absorbed and the lung reexpands and resumes its functions.

The method has been used in advanced and hopeless cases when nothing else availed, cases that at autopsies show the well-remembered typical picture of such conditions. There are the white, gaping, cross-sections of thickened bronchial and vessel walls held out by the caseous, greenish, blackish infiltrations through which constantly ooze the liquefying contents of an infinitude of disintegrating foci. How is it possible for such a lung to recover? If we could tie off the vessels and remove the whole mass of poisonous materials the patient might live. Whatever surgery may do in the future, it does not at present attempt the removal of an entire lung. To-day the best we can do to imitate surgical methods is to fill the pleural cavity with nitrogen until the lung is so closely compressed that it is practically obliterated and removed.

In uncomplicated cases the compression of the lung is not a difficult undertaking and requires no surgical skill or training. A fine hypodermoclysis needle may be

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

thrust through the tissues into the pleural cavity and the nitrogen injected just as any solution would be injected. This was done by Forlanini,[1] who first proposed the method in 1882. In 1898 Murphy[2] published his independent conception of the same theory. Murphy made a small incision through the skin, and pierced the pleura with a medium-sized, blunt aspirating needle.

Brauer[3] makes a free incision, retracts the tissues and examines the surface of the pleura. If it is smooth and glistening and the motion of the lung beneath is seen, the pleura is pierced with a blunt Salomon catheter. This is the only safe way to produce a pleural cavity. If the operator cannot see where the point of the needle is, he may make mistakes that will cost the patient dear. It may be that the needle pierced only the endothoracic fascia and did not go on through the pleura but stopped in the endothoracic space, and if the nitrogen is turned on it will cause an emphysema running up into the neck and face, down the arm and into the fingers, over onto the other side or down to the hip. The needle has been known to enter the abdominal cavity, a band of pleural adhesions, the interstices of the lung, a bronchus or a blood-vessel.

Saugman used a manometer to show the changes in intrapleural pressure caused by different positions of the chest-wall. When the chest-wall is pulled away by inspiration, the pressure in the pleural cavity falls. As the chest-wall sinks back, the intrapleural pressure rises. If the manometer does not show these respiratory changes in pressure, the needle is either stopped or it is not in the pleural cavity. The danger of gas embolism is so great that the nitrogen should never be turned on unless the manometer shows good respiratory excursions. How much nitrogen shall be used and how often must it be put in?

A standard of pressure is established in each case and then is maintained as evenly as possible. To heal to the best advantage, a lung must be kept from expanding, and therefore a good deal of pressure is necessary and desirable. If too much pressure is used, the digestion, the circulation and the nervous status of the patient may suffer. No more pressure may be used than can be well borne by the mediastinal pleura; if this stretches, then extra pressure does not mean compression of the lung but bulging of the mediastinal pleura over to the other side, and this causes distress and impedes the action of the other lung. If the pleura yields and allows the nitrogen to escape, it will oppress the heart, choke the throat and alarm the patient. The pressure may also force the nitrogen back through the track of entry and cause subcutaneous emphysemas, sometimes remarkable in their extent.

If 4 cm. of positive water-pressure is found sufficient to keep the lung well compressed and is well borne by the patient, just enough nitrogen is put in to bring back the amount of pressure to the standard. A record curve is kept of the pressure and an attempt is made to have this as even as possible. To do this the fillings must be made frequently until the pleuræ begin to lose the power of absorption because while this continues there is a steady loss of nitrogen with a corresponding fall in pressure and tendency on the part of the lung to expand. If the loss of pressure is insignificant, the interval is lengthened; if it is too great the interval is shortened.

1. Forlanini, C.: Primi tentativi dei pneumotorace artificiale nella tisi polmonare, Gazz. med. 1894.
2. Murphy, J. B.: Oration on Surgery, THE JOURNAL A. M. A., July 23, 1898, p. 151.
3. Brauer, L., and Spengler, Lucius: Beitr. z. klin. d. Tuberk. (Brauer's), 1910, xiv, No. 1.

RESULTS OF COMPRESSION

As the lung gets smaller and smaller, the walls of cavities and abscesses are closely approximated and their foul, decomposing contents are forced up through the bronchial tubes and out through the mouth. The pressure of the nitrogen squeezes out the filthy, poisonous contents of the lung and makes it clean and dry, just as you would squeeze water out of a sponge.

The two factors on which the recovery of a compressed lung depend are these: First, the lung is made clean and dry and kept so; second, fibroblasts shoot out from the injured walls of bronchi and vessels, and organize tuberculous lesions into scars, thus obtaining an anatomic recovery of the most durable nature. Autopsies have shown that in such recoveries the suppurating walls of abscesses and cavities appear only as linear scars, and throughout the whole of the lung not a trace of active tuberculosis can be found.

As the tuberculous processes are extinguished and no more toxins are produced, the temperature becomes normal, the night sweats cease, and the cough lessens. In uncomplicated cases the results are comparable to the drainage and cleansing of any other surgical condition, and often they are equally precise. We have had at Highlands Camp Sanatorium seven cases of high temperatures which had persisted for from six to eighteen months and which nothing could reduce; after a few weeks of compression the temperature has remained persistently normal. A common result is the disappearance of tubercle bacilli so that there is no more danger of infection either to the patient or to his surroundings.

When should the method be used? If all else has failed, if symptomatic and tuberculin treatment cannot arrest the process, then the attempt to save the patient by compressing the lung would seem to be amply justified. The contra-indications are, any complication sufficient in itself to inhibit recovery, and too great an involvement of the other lung.

Over 600 cases have already been reported with about 40 per cent. of recoveries. All of these were advanced and hopeless cases and the causes of failure were not so much in the method itself as in the inability to use it. The pleural surfaces may be so adherent that a pleural cavity cannot be produced. A small pocket may be gradually enlarged or resist all pressure. Pleural bands may hold the lung out so that it cannot be compressed and the pleural vessels may be so engorged and multiplied as to resemble a malignant neoplasm.

Even if we succeed in compressing the lung, we may have to give up the attempt because a tuberculous process flares up in the other lung, or in the intestines or kidneys. There is danger of injuring the lung and causing an abscess, and of infecting the pleuræ when the needle is withdrawn. Empyema may be caused by infection of the track of entry. Gas embolism, the greatest danger of all, may be avoided by Brauer's method and careful attention to the manometer.

What does the method accomplish and by what means? The pressure of the nitrogen immobilizes the lung and gives it complete rest; the edematous infiltrations characteristic of pneumonic and progressive cases are restrained. There is a vigorous connective-tissue infiltration that secures an anatomic recovery of the most durable nature so that the danger of a relapse as far as the compressed lung is concerned is minimized. The "bilious attacks" and "colds" that so often retard recovery do not affect a compressed lung, so that each day

adds its quota of recovery. In typically successful cases the results are almost spectacular. The temperature falls, the cough lessens, the tubercle bacilli disappear, and the patient gains in weight and strength. Patients with high fever, drenching night sweats, profuse, purulent expectoration, profound cachexia and exhaustion are saved as by a surgical operation.

We have had thirty-one cases. Six patients are dead, and three have not been under treatment long enough to afford data to report; ten are still uncertain, five because of lack of time; ten are improving, and in two cases the lung has expanded, resumed its function, and there have been normal breath sounds and resonance for over a year.

ABSTRACT OF DISCUSSION

DR. SAMUEL ROBINSON, Boston: I have been much interested in the treatment of pulmonary tuberculosis by compression of the lung from a surgical point of view. In twenty of the forty-five cases in which I have performed injections I have made an incision of the pleura. I regard the needle method as a simple procedure and one which should be employed by internists. Dr. J. B. Murphy, of Chicago, described this treatment in 1898; the late Dr. Lemke continued the work and reported a series of cases; the Germans and Italians have been employing the method since 1900.

Dr. Lapham's enthusiasm about the method might exert an undue influence. I do not think that we should be led to believe that 40 per cent. of the cases of the second-stage tuberculosis are cured by this method. Without doubt, the disease is arrested in a certain number of patients, but I cannot believe that the percentage is as high as stated by Dr. Lapham. I have had considerable experience with this treatment and am impressed with the systematic relief almost universally resulting. Tuberculin has in many ways been disappointing and it is fair to say that the pneumothorax treatment offers more chances of relief than any other treatment in this group of cases. Success depends largely on perseverance both of the physician and the patient, and it is not advisable to start the treatment except with the promise of continued cooperation.

My surgical experience in the thorax has developed in me a greater respect for the pleural cavity than that possessed by many internists. The needle should be introduced with the greatest caution and a manometer used as a guard against air embolism. Respiratory excursions should be carefully watched. The pleurae are always opposed, if not adherent, and the needle therefore must stop at just such a point in order that the nitrogen may enter the pleural spaces. Frequently it must be withdrawn and another site selected. From a surgical point of view I recommend this method and believe it to be a safe procedure in the hands of competent persons.

DR. S. ADOLPHUS KNOPF, New York: It should be remembered that in speaking of any new and untried treatment it is unwise to neglect to speak of the importance of the hygienic, dietetic and climatic treatment of a disease like pulmonary tuberculosis. Perhaps it was merely lack of time that made Dr. Robinson omit these essentials of modern phthisiotherapy. I have been overwhelmed with awe and admiration while hearing the wonderful report of 40 per cent. of cures in advanced cases of pulmonary tuberculosis! To hear such a report is surely a delight to anyone who works with this class of cases. My own statistics are far, far inferior; I have never had, nor ever heard, of such results. We must, however, pause for a moment and consider the meaning of the word "cure." At Washington last week, one of the most interesting subjects that were brought up for discussion was this word "cure" as applied to pulmonary tuberculosis and whether it should be accepted at all. "Why not speak only of arrested cases?" said some. "There is no sure cure," said another. The term "arrested" seemed to be considered a safer expression than "cured." While I would not wish to abandon the word "cured" in our nomenclature, I agree with those who said that we should be very careful before using the words "absolute cure" in pulmonary tuberculosis. It would seem best not to speak of absolute cure unless the patient has remained for at least two years without tubercle bacilli in the sputum, without any physical signs except those which are caused by cicatrized condition in the lungs, and, of course, with no cough and with freedom from all other symptoms. When it is said that cures are obtained within three or four months in 40 per cent. of advanced cases by the method described, I am a little apprehensive, and I should like to ask Dr. Lapham just what she means by "advanced cases" and by "absolute cures." As a rule, the advanced cases are bilateral. I do not think that I would like to inject nitrogen gas in cases in which both lungs are involved. I would be willing to try this treatment when assured that the diseased condition is confined to one side. I would also be willing to try it in an uncontrollable hemorrhage which can be localized, but I do not think we can resort to artificial pneumothorax as a routine treatment.

While I do not wish to be misunderstood in questioning the accuracy of the statements of Dr. Lapham, which are remarkable and probably due to a very wise selection of cases, I plead for conservatism in making public such statements as that with the new treatment 40 per cent. of absolute cures can be obtained. We need much, much more experience with artificial pneumothorax, more data by many observers, before we speak numerically of results in a condition so difficult to treat and to cure as pulmonary tuberculosis in advanced stages.

DR. CHARLES L. MINOR, Asheville, N. C.: The conservative attitude taken by Dr. Robinson is wise, for too great claims for the new procedure now would only retard its acceptance. It seems to me that the procedure offers us an excellent means of ameliorating the condition in advanced and hopeless cases for which we can now do nothing. Even if we do not take as optimistic an attitude as Dr. Lapham as to the results the method can yield, it should still be a great addition to our resources.

DR. FRANCIS M. POTTENGER, Monrovia, Cal.: This method of treatment is one that offers relief to a certain class of patients which has hitherto baffled our skill. I would not expect, however, to cure in 40 per cent. of hopeless cases. Cases for artificial pneumothorax should be carefully chosen and the operation should be done with caution. I believe it is possible by this method to make more comfortable and prolong the lives of a certain percentage of patients.

I have been watching this operation with great interest for several years, and while I have not come to its use, I am convinced that it has considerable merit in certain cases. To become too enthusiastic is dangerous to any measure or remedy. In the use of this method we must not forget that there is suddenly thrown on the heart a considerable increased burden, and that it is the heart that bears the brunt in tuberculosis. The shutting off of a large portion of lung tissue in patients who are already seriously crippled because of lack of lung increases the burden on the heart in a manner that cannot be looked on otherwise than seriously. Therefore, it seems to me that the suggestion made by Dr. Robinson that the gas should be injected cautiously and not too much at a time is very timely. It certainly would be most unfortunate to collapse one lung entirely if the other was not in good condition.

I feel that there is no place for pessimism in the treatment of tuberculosis. Those of us who followed this work in recent years have certainly seen enough to make us optimistic; at the same time we must keep our optimism tempered with judgment, and realize that we may do all that a remedy and measure can do and still not cure the patient. We should consider this method carefully and watch the result of its employment both as to its immediate effect and its after consequences, before giving judgment.

DR. MARY E. LAPHAM, Highlands, N. C.: Dr. Robinson has spoken of the difficulties attending the compression of the

lung. If you will read the reports I think you will agree with me that the cause of failure is not in the method itself but in the inability to use it. The pleural surfaces may be too adherent to produce a pleural cavity, or possibly only a small pocket can be formed which pressure cannot distend, or the surface of the lung may be so held out by adhesions that it cannot be compressed, or the pleural vessels may be so multiplied and engorged as to constitute a veritable angioma fairly comparable to a malignant neoplasm. In these cases the lung cannot be compressed because we have waited too long. Even if we are able perfectly to compress the lung and obtain good results, we may find later on that the attempt must be relinquished because an unsuspected process flares up in the intestines or in the other lung. Once more we have waited too long and the method fails because it is too late. I fully agree with Dr. Knopf as to the value of hygienic and dietetic treatment. I used the word "symptomatic" as it is used in Switzerland, meaning thereby all measures that are not medical or surgical. We have had four bilateral cases in which we compressed the second or last lung attacked. The process had dragged itself through the first lung, scarring as it went, but the second lung broke down into disintegrating foci. We compressed the cavities of these second lungs with marked success while depending on the functional capacity of the scarred first lung. The action of the heart must be carefully watched. It is often distressed at first but eventually benefited. One of the four patients had a pulse of 140, very irregular and intermittent. The patient was cyanotic and suffered a great deal from crises of dyspnea. During the first forty-eight hours after nitrogen was injected there was a good deal of pain and sleeplessness but after that the pulse began to be less frequent and stronger and within two weeks was 84, and at present is 72. The respirations, which were 36 to 40, are now 22. In this second lung there were three cavities and the patient was exhausted by the continuous efforts to empty them. These cavities are well compressed and the patient is only expectorating about a teaspoonful in the morning, after which he hardly coughs at all through the day.

BACTERIOLOGY OF EPIDEMIC SORE THROAT *

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In view of the wide-spread interest in the so-called septic sore throat prevailing in epidemics in various centers of the country, and in view of the fact that a diversity of opinion seems to exist as to the bacterium causing the infection, some describing the organism as a pneumococcus, others as a "peculiar streptococcus," it seemed important to record the morphologic and cultural characteristics of the organism isolated during the recent epidemic in Baltimore.

Outbreaks of sore throat attributed to milk and cream have been reported in England since 1881, of which a good résumé is given by Swithbank and Newman,[1] who conclude: "We think it safe to assume that a year never goes by in which there are not outbreaks of sore throat or tonsillitis due to cream or milk." In this country, however, only a few epidemics have been reported.

As the symptoms and complications have been described during these outbreaks, reference will be made only to the bacteriologic findings.

In 1897, a small epidemic occurred at Anglesey[2] at which time the milk was examined bacteriologically and staphylococcus and *Streptococcus pyogenes* were found.

In 1902, during the epidemic occurring at Lincoln,[3] Dr. Klein isolated a "special organism"[4] from the throat by means of swabs.

In 1911, during the Boston epidemic, Dr. Darling[5] reported that many cultures were taken from throats as well as from secondary foci of infection and that the "organisms usually found were streptococci, often associated with staphylococci or pneumococci."

During the past winter an epidemic occurred in Chicago and Baltimore. In the former Dr. Rosenow and Dr. Davis[6] isolated an encapsulated hemolytic streptococcus, occupying a position between the ordinary hemolytic streptococcus and the *Streptococcus mucosus*, which always acidified and sometimes coagulated milk. In the Baltimore epidemic, Dr. Hamburger[7] reported the finding of a non-capsulated streptococcus which always coagulated milk. During the same epidemic Dr. Hirshberg[8] reported forty-three cases which he attributes to an infection by the pneumococcus.

A few cases from sources which could leave no doubt as to the etiologic relationship of the organisms isolated would be more important than a large series of throat cultures in which a mixed infection would make it difficult to determine which organism caused the disease. Opportunities were offered to obtain cultures from the peritoneum, blood, suppurating glands, and peritonsillar abscesses. A short history of these cases and the source of the cultures is therefore deemed expedient.

CASE 1.—A young woman, aged 37, had a rather mild attack of tonsillitis with patches on the throat. The glands of the neck were enlarged to about the size of the end of the thumb. To the patient the temperature never seemed over 100, and the throat and glands seemed to get better after an illness of four days' duration. On the sixth day, however, the patient was seized with acute general cramp-like pains in the abdomen accompanied by nausea. She was therefore taken to the hospital.

On admission, the temperature was 104, and the leukocyte count 17,700. The throat was reddened, especially the pillars; the glands were enlarged and tender. The heart and lungs were clear. The abdomen was slightly distended, moving very little on respiration; there was general rigidity and tenderness, with no localizing area. An exploratory operation was performed twenty-four hours after admission to the hospital. A general acute peritonitis was found. Two days later the patient died. Culture was obtained from the peritoneal exudate.

CASE 2.—A child, aged 2, had an illness beginning with sore throat and swelling of the lymph-nodes in the neck. Three days later the abdomen became swollen and the patient suffered from pain and obstinate constipation. The temperature ranged from 104 to 105. The following day the abdomen was still tender and rigid, peritonitis was apparent, and the patient's condition seemed desperate.

On the fifth day the patient was taken to the hospital. There was a scarlatinal rash over the chest, abdomen and back. Operation was deemed inadvisable, but a blood-culture was made from the arm, and a pure culture was obtained on blood-agar, milk, and glucose bouillon. The child died on the afternoon of the fifth day.

CASE 3.—A child, aged 2½, had an illness which began with a sore throat. Three days later the tonsils were enormously swollen and the cervical lymph-nodes were very large. The throat gradually improved and most of the lymph-nodes subsided. One gland on the right side just above the middle of the

* From the Medical Clinic, Johns Hopkins Hospital.

1. Swithbank and Newman: Bacteriology of Milk, 1903, London.
2. Grey-Edwards, C., and Severn, Walter D.: Brit. Med. Jour., 1897, ii, 339.
3. Brook, W. H. B.: Lancet, London, 1902, ii, 1391.
4. Unable to find any other reference in the literature.
5. Darling, E. A.: Boston Med. and Surg. Jour., 1911, clxv, 904.
6. Rosenow, E. C., and Davis, D. J.: THE JOURNAL A. M. A., March 16, 1912, p. 773.
7. Hamburger, L.: THE JOURNAL A. M. A., April 13, 1912, p. 1109.
8. Hirshberg, L. K.: THE JOURNAL A. M. A., April 20, 1912, p. 1189

clavicle suppurated, and was opened twenty-three days after the onset of the disease. A pure culture was obtained from the pus of this gland.

CASE 4.—In an adult, illness began on March 9 with chilliness, headache, nausea and slight sore throat, which was inflamed and showed follicular patches. Three days after onset the condition became much worse, the throat very sore and the patient had difficulty in swallowing. There was marked edema of the peritonsillar tissue, and the glands of the neck were much enlarged. The throat was incised in several places on the fifth day and a pure culture was obtained from the serous fluid.

CASE 5.—A child, aged 3 months, when first seen had red edematous areas over both shoulders about 2 to 3 cm. in diameter. The shoulder-joints were not involved, but the neck was stiff. These masses were more edematous than red, and a surgeon was called in consultation. Three days later the left elbow became involved, and in two days more the swelling had extended to the wrists, and by this time had a well defined margin. The case terminated with multiple abscesses in the axillæ and wrists from which pure cultures were obtained. The temperature was never very high, nor was a history of sore throat recorded.

BACTERIOLOGIC FINDINGS

The strains isolated were compared with two known strains of pneumococci, with two strains of streptococci isolated from puerperal infections, and with a strain of streptococcus obtained from the cerebrospinal fluid in a case of meningitis following otitis media. Table 1 gives a summary of the bacteriologic findings.

Morphology.—In smears obtained from the surface of a twenty-four-hour growth of blood agar slants, the cocci appeared as spherical or flattened pairs, often forming short chains. Five strains of pneumococci obtained from cases of lobar pneumonia and five strains isolated during the epidemic from the cases described above were inoculated into glucose bouillon. Smears were made at the end of twenty-four hours, and care was taken not to break up the chains by manipulation on the slide. None of the pneumococcus strains appeared in chains longer than six pairs, and were usually in twos. The strains isolated during the epidemic formed long, twisted chains of fifty pairs or more in some instances. In keeping with this finding is the behavior in bouillon as shown in Table 1. The *Streptococcus brevis* and the pneumococcus produce a uniform turbidity in bouillon, while the *Streptococcus longus* leaves the bouillon clear with a flocculent precipitate at the bottom of the tube.

All the cultures were strongly Gram-positive.

Capsules were demonstrated in three strains (Cases 1, 2 and 3) even after they had been on artificial mediums one month. These capsules were distinctly of the streptococcus type as described by Buerger.[9] Cases 4 and 5, and the two strains isolated from puerperal infections by means of blood-cultures did not give capsules in cultures which had been on artificial mediums for one month.

No attempt was made to determine the minimal lethal dose chiefly because thus far there has been no established standard of virulence for streptococci, and it was felt that nothing could be gained along this line. Animals, however, were inoculated with each strain to see if capsules could be obtained by passing the strains through an animal and staining the smears obtained from the heart's blood. An emulsion was made from a twenty-four-hour growth of an average blood-agar slant in 1 c.c. of sodium chlorid, and 0.2 to 0.3 c c. inoculated into mice subcutaneously. Mice inoculated with organisms from Case 4, and Streptococcus C and Streptococcus J, respectively, died within twenty-four hours. The mouse inoculated with organisms from Case 4 showed very few organisms in the blood. No capsules could be demonstrated. The mouse inoculated with organisms "Streptococcus C" showed numerous capsulated cocci in the blood. The mouse inoculated with organisms "Streptococcus J" showed numerous organisms in the heart's blood, but no capsules could be demonstrated by any method. A mouse inoculated with organisms from Case 5 died in four days. Numerous organisms were found in the heart's blood, but no capsules could be demonstrated. A mouse inoculated with culture of Streptococcus B died in four days. Few organisms were found and no capsules could be demonstrated. A twenty-four-hour growth of a small blood-agar slant of cultures from Cases 1 and 3 was inoculated intravenously into rabbits weighing 1,300 gm. each. A rabbit inoculated with organisms from Case 1 died in two days. A few capsulated organisms were found in the heart's blood. A rabbit inoculated with culture from Case 3 died in four days. Numerous organisms were found in smears from the heart's blood. Capsules were readily demonstrated, showing the streptococcus type of capsules.

Cultural Characteristics.—On blood-agar plates, a clear-zone of hemolysis was produced several millimeters in diameter. There never was a suggestion of green tinge

TABLE 1.—SUMMARY OF BACTERIOLOGIC FINDINGS

Strains.	Milk Acid.	Milk Coagulated.	Bouillon Turbid.	Bouillon Clear with Floc. Sed. 48 Hours.	Growth in Gelatin at Room Temperature.	Hemolysis on Blood-Agar Plate.	Morphology in Glucose Broth.	Capsules in Cultures Isolated 4 Weeks.	Capsules from Heart's Blood.	Precipitation on Glucose-Serum Agar.	Fermentation of Inulin.	Per Cent. Acid Formed in 72 Hours. Glucose.	Lactose.	Raffinose.	Mannit.	Salicin.
Pneumococcus B	+	+	+	0	0	0	Usually pairs	+	+	0	+	1.4	1.4	1.4	0.0	...
Pneumococcus G	+	+	+	0	0	0	Only pairs	0	+	0	+	1.4	1.4	1.4	0.0	...
Streptococcus B	+	0	0	+	+	+	Long chains	0	0	+	0	1.2	1.0	0.0	0.4	+
Streptococcus J	+	0	0	+	+	+	Long chains	0	0	+	0	1.0	0.8	0.0	0.0	0.0
Streptococcus C	+	0	0	+	+	+	Long chains	0	+	+	0	1.2	1.0	0.0	0.0	0.0
Case 1	+	0	0	+	+	+	Long chains	+	+	+	0	..	0.6	1.0	0.0	0.0
Case 2	+	+	0	+	+	+	Chains of 50 prs.	+	+	+	0	1.1	1.0	0.0	0.0	0.0
Case 3	+	+	0	+	+	+	Chains of 25 prs.	+	+	+	0	1.0	1.1	0.0	0.0	0.0
Case 4	+	0	0	+	+	+	Chains of 50 prs.	0	0	+	0	1.0	0.6	0.0	0.0	0.0
Case 5	..	0	0	+	+	+	Chains of 10 prs.	0	0	+	0	1.2	1.0	0.0	0.0	0.0

9. Buerger, Leo: Jour. Infect. Dis., 1907, iv, 426.

to the surrounding medium or to the colonies. The colonies were rather larger than one usually finds in cultures of the *Streptococcus pyogenes* and often gave a suggestion of white and rather dry appearance.

On serum glucose agar a marked precipitation occurred with the strains isolated during the epidemic, also with the two strains from puerperal infections and the strain from the cerebrospinal fluid, but none with five known pneumococcus strains.

The reactions in milk are indicated in Table 1.

In bouillon a diffuse clouding occurred at first which at the end of twenty-four hours had largely settled to the bottom into a flocculent precipitate with some flakes floating through the medium. The supernatant fluid became entirely clear in thirty-six hours.

No growth occurred on potato.

All of the cultures grew on gelatin at room temperature except the two pneumococcus strains.

Inulin was not fermented.

None of the strains isolated was dissolved by fresh beef bile.

We thus have a coccus, growing in long chains, producing a clear zone of hemolysis on blood-agar, precipitating serum-glucose agar, not fermenting inulin, often possessing capsules of the streptococcus type. All the strains fall into the hemolytic or pyogenes group of Schottmüller.[10]

RELATIONSHIP OF THIS STREPTOCOCCUS TO OTHER STREPTOCOCCI

The question naturally arises as to whether we are dealing with a new type of streptococcus, or whether we are dealing with the usual type of *Streptococcus pyogenes* of a more virulent type.

If we adopt the classification of Schottmüller, the strains isolated fall into the ordinary *Streptococcus pyogenes* group which is characterized by the clear zone of hemolysis which the colonies produce on blood-agar.

If we now wish to separate further this group we may apply the so-called Gordon tests. In 1903-4 Gordon[11] grouped the streptococci by their ability to ferment the various carbohydrates, glucosids and polyatomic alcohols. To these tests he added the clotting of milk and the reduction of neutral red under anaerobic conditions.

In 1906 Andrews and Horder[12] analyzed 228 strains pathogenic for man by applying these tests and adopted the classification given in Table 2.

According to this classification the *Streptococcus pyogenes* group would be divided into two groups:

1. The usual *Streptococcus pyogenes* group which does not clot milk or ferment raffinose.

2. The *Streptococcus angiosus* group which usually clots milk and often ferments raffinose.

The *Streptococcus pyogenes* group is usually associated with suppurations, erysipelas and septicemias.

The *Streptococcus angiosus* group is especially associated with inflamed throats, scarlatinal and otherwise. It is also found in malignant endocarditis, peritonitis and otitis. This group also corresponds to the *Streptococcus scarlatinæ* of Klien and the *Streptococcus conglomeratus* of Kurth.

The *Streptococcus salivarius* and the *Streptococcus fecalis* groups are relatively avirulent, short-chained varieties obtained from the saliva and the feces, respectively. These do not cause a hemolytic zone on blood-agar and are often associated with chronic endocarditis.

Andrews and Horder conclude: "We find that we can more readily 'place' a streptococcus and surmise its source and probable virulence by aid of the Gordon tests than in any other way."

Applying to our strains the Gordon tests we find that strains from Cases 1, 2 and 3 either coagulate milk or ferment raffinose, which would place them into the *Streptococcus angiosus* group. Strains from Cases 4 and 5 behaved exactly like the ordinary *Streptococcus pyogenes*, i. e., did not coagulate milk or ferment raffinose. Our Case 5 may have been one of atypical erysipelas, but the clinician in charge considered it to be of the type which was associated with the Baltimore outbreak of sore throat.

PRESENCE OF A CAPSULE NOT A SUFFICIENTLY DISTINGUISHING FEATURE

Davis[13] suggested a new classification of streptococci in which he separated the *Streptococcus pyogenes* from the strains isolated during the epidemic. The only distinguishing point is the presence of a capsule which he was able to demonstrate in the epidemic group and which he termed *Streptococcus epidemicus*. That this is not a sufficient distinction is shown by the fact that Buerger[9] was able to demonstrate capsules in at least 25 per cent. of all the strains of streptococci coming to the laboratory during routine examinations. Strains from cases of otitis media often have capsules, as is also shown in Streptococcus C of this series. In the Baltimore epidemic no reports of cases have thus far been published in which evidence has been submitted to prove that any of the strains were pneumococci.

TABLE 2.—CLASSIFICATION OF HORDER *

	Milk Clotted.	Acid in Saccharose.	Acid in Lactose.	Acid in Raffinose.	Acid in Inulin.	Acid in Salicin.	Acid in Mannite.	Growth on Gelatin at 20° C.	Morphology in Broth.	Hemolysis on Blood Agar.	Pathogenicity for Mice.
S. pyogenes ..	0	+	+	0	..	±	..	+	†	+	+
S. salivarius ..	±	+	+	±	..	±	..	±	‡	0	..
S. angiosus .	±	+	+	±	..	±	..	+	†	+	+
S. fecalis ...	±	+	+	±	..	+	+	+	‡	0	..
Pneumococcus.	±	+	+	+	±	..	..	0	‡	0	+

* Horder, T. J.: Quart. Jour. Med., 1908-9, ii, 289. Table modified to include the intermediate varieties.
† Longus; ‡ Brevis.

Judging from the behavior in milk of bacteria in the cases reported and from Cases 1, 2 and 3 in this report it would seem to be indicated that many of the cases belong to the *Streptococcus angiosus* group, and that the behavior of the streptococci from these cases was not very different from that of the streptococci complicating severe cases of scarlet fever. Cervical adenitis is the most frequent complication of scarlet fever, and fulminating cases of scarlet fever associated with sore throat are also seen in which the picture is that of a septicemia.

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10. Schottmüller, H.: München. med. Wchnschr., 1903, i, 849.
11. Gordon, M. H.: Report of the Local Government Board, 1903-4, xxxiii, 388.
12. Andrews, F. W., and Horder, T. J: Lancet, London, 1906, ii, 708, 775.
13. Davis, D. J.: THE JOURNAL A. M. A., April 27, 1912, p. 1283.

RHEUMATISM

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If we were able to abandon the word "rheumatism" for more specific interpretation of the actual causes which give rise to a group of symptoms that go to make up the picture of this affection, material advancement would be made in the conception and treatment of this type of human ailments. The terms "neuralgia," "anemia," "dyspepsia," etc., were applied in the early days of medicine, to a certain group of symptoms; many of these vague terms have been replaced by names indicating direct causes of these conditions, and we hope that before long rheumatism will be given a more scientific place in medicine.

In the consideration of rheumatism too much attention has been given to secondary symptoms, as arthritis, endocarditis, pericarditis, etc. There the *materies morbi* has been sought and treatment directed for relief. To make confusion worse, every ache, pain and swelling of the articular structures has been called rheumatism until experience has proved the contrary; some affections of the joints that were not rheumatic underwent resolution, but the diagnosis was never changed. A short time ago I read a very able article by a foreign writer on tuberculous rheumatism. Why should not tuberculous arthritis be called by its real name rather than tuberculous rheumatism? The general use of the word "rheumatism" precludes it being synonymous with arthritis, for we have muscular, cerebral and peritoneal rheumatism. The word "rheumatism" has been badly overworked, and charges mountain-high have piled up against this obscure affection; it has served the interest of doubtful physicians; it has assumed the responsibility of malingering and played the rôle of fraud; it has been a financial pillar for the patent-medicine manufacturer and has upheld the quack; it has been a haven for stupidity and has contributed to the mockery of science.

Rheumatism has always been described as a disease or an affection characterized by certain symptoms. Much work has been done to fix the responsibility on some specific agent, but so far efforts in this particular have not been conclusive, though it would seem that opinion is now firmly established that a microbic infection is the cause. The preponderance of evidence, although lacking in positive proof, supports the belief that the group of symptoms called rheumatic fever is caused by infection; and in view of all the present facts in connection with the disease, no other theory is capable of explaining the phenomena associated with this common affliction. Much valuable labor has been lost in not giving sufficient scope of interpretation to the clinical picture of these cases; too often it has been taken for granted that all articular symptoms of a painful character arise from a common source, and forthwith the case is classified as rheumatic.

The symptoms of articular rheumatism are so constant that a strong belief grew up that there was a single cause; but when the symptoms are examined none of them is found to be pathognomonic. Tuberculous arthritis is often mistaken for rheumatic arthritis; the local picture is practically identical in the beginning and medical history is replete with cases of tuberculous arthritis that have been treated for rheumatism a long time before their true nature was recognized. Gonorrhea, syphilis, osteomyelitis, periostitis from streptococcus or staphylococcus and other infections cause symptoms not easily distinguished from rheumatism. The sour odor of the perspiration in rheumatism has nothing characteristic about it; the sweating is produced by low blood-pressure caused by the absorption of toxins. I think more than a single cause can produce the classical symptoms of rheumatic fever. Some infections no doubt have the power to set up an inflammation more severe in one kind of tissue than in another, and the same infection may on different occasions show itself in a mild and anomalous manner. I have seen typical cases of rheumatism follow infectious tonsillitis; I have seen equally typical cases associated with an enterocolitis. Recently I have treated two cases and seen another in consultation that presented the classical picture of rheumatic fever, and one of the patients developed endocarditis. In all of them the picture was the same; the rheumatic manifestations were secondary to an enterocolitis. The enterocolitis was characterized by considerable abdominal distention without tenderness, the passage of a large amount of intestinal mucus, a tendency to constipation, temperature variable but reaching a maximum of 104, soft pulse and sweating.

INVOLVEMENT OF THE INTESTINAL TRACT

The most noticeable symptom in all these cases was the passage of large amounts of intestinal mucus; the articular symptoms kept pace with it and did not disappear until the mucus had left the stools. During the course of these cases there occurred exacerbations and remissions of mucous discharge, which was associated with an increase and diminution of the rheumatic symptoms, clearly indicating that the intoxication producing the rheumatic manifestations was traceable to the morbid processes going on in the intestinal tract. I regret that it was not possible to make a systematic study of the intestinal dejections during the progress of these cases for the purpose of isolating the nature of the bacteria causing the enterocolitis. One of these cases has remained under my observation; it has been interesting to note that any disturbance of intestinal digestion is associated with arthritic symptoms, and that it is only by a close adherence to a suitable dietary that a painful condition of the joints is avoided. I think that the intestinal involvement in this case would go unnoticed by the patient if she had not been instructed as to the source of her rheumatic symptoms.

A short time ago I saw an elderly man about 80 who had suffered from rheumatism for thirty years. He had been compelled to use crutches and canes to go about for twenty years, and this period of his life had been made miserable by painful and stiff joints. My service in his case was called for the purpose of bolstering up a failing heart, but I obtained a history in his case which afforded material for reflection. He cautioned me not to give him anything that would act as a strong physic, for the reason that it would set up a troublesome diarrhea that would be hard to check; he further said that he had been subject to looseness of the bowels for a long time and that food would frequently pass through him undigested and associated with much mucus and rectal tenesmus. His mind was not clear on the question as to the relationship between the rheumatic symptoms and the intestinal trouble except as to their coexistence.

In looking over the literature on rheumatism one is impressed with the little space devoted to the discussion of any direct relationship existing between intestinal disturbances and rheumatic fever. The former is generally treated as a complication of the latter, though by implication much importance is attached to their relationship

In the treatment of rheumatism a proper diet is held as essential by almost all authors; in prophylaxis they hold that hygienic and dietary measures should receive first place; specific articles of diet are mentioned as being repugnant to the best interest of these patients and a general admonition is given to avoid any article which is liable to disturb the digestive system. In my experience the subjective symptoms associated with intestinal involvement in cases of rheumatic fever are rarely severe enough to call for much comment on the part of the patient, and unless special inquiry is made into the significance and relative importance of such manifestations, they will be attributed to complications.

In laying so much stress on the primary involvement of the intestinal tract in certain cases of rheumatic fever and the importance of directing the principal treatment to this tube, it would seem that I am dealing with a few isolated cases which should have no weight or influence in the determination of a well-recognized cause. It does not seem possible that the importance of primary intestinal infection in a common disease like rheumatic fever would have escaped the attention of many acute and careful observers, and for this reason I have much timidity on offering it as a sound suggestion; but the infection enters the body at some place and having a tendency to recur it is rational to conclude that a *locus minoris resistentiæ* must afford the seat of invasion; it may be the tonsils, pharynx or some other part of the alimentary canal. The point which I want to bring out most is the importance of examining the entire alimentary canal to ascertain the seat of invasion, for the purpose of more intelligent management of these cases. I feel that a more systematic study directed toward locating the initial source of the infection will lead to a better understanding of rheumatic manifestations, simplify treatment and reduce complications.

THE ACTION OF PREDISPOSING CAUSES

Heredity is mentioned as one of the predisposing causes of rheumatism. On the theory of the infectious character of the disease, predisposition is explainable on the grounds that certain families without question possess vulnerability that is not seen in other families, and no doubt this predisposition is not limited to one kind of bacterial life. It is impossible in our present light of organic construction and metabolic activity to give a qualitative or quantitative definition to that peculiarity which we group under the term predisposition to certain diseases; but general observation teaches us that some individuals do not attain, in the process of their development, a normal grade of tissue construction which enables them to offer substantial resistance to a hostile environment.

Other predisposing causes are cold and dampness. The manner in which these act is in depressing the resistance of the individual. Both cold and dampness favor heat radiation from the body and bring the temperature below normal with a consequent reduction in antagonism to bacterial life. The truth of this is so well exemplified in the catching of an ordinary cold that it seems hardly necessary to dwell at length on the part played in the reduction of temperature in the provocation of some diseases. For an individual to maintain his best resistance the temperature must be constant and normal; reduction of temperature decreases physiologic activities and the standard of resistance, under which circumstances bacteria gain a foothold. It does not follow that every time one suffers a reduction in temperature, disease of some sort will follow. The presence of bacteria in sufficient numbers possessing a certain virulence is necessary. In reviewing the clinical picture of chronic cases of rheumatic fever, that is, those cases which show recurring symptoms after an acute attack, I am led to believe that the patients still harbor bacteria that caused the acute attack. Errors in diet, exposure to cold or dampness, fatigue, etc., provoke these attacks; under these unfavorable circumstances the resistance of the patient is diminished and lurking bacteria are offered less opposition. Latent tuberculosis and other dormant infections manifest themselves in certain conditions; in a like manner the bacteria causing rheumatic fever may remain dormant an indefinite time and show their presence only during perverted metabolic processes of the patient.

Recurring aches and stiffness of the muscles and joints generally spoken of as rheumatic can often be traced to various causes that have no relation whatever with rheumatic infection. I have in mind a patient who has always lived a sedentary life and who has been a sufferer from supposed rheumatism for twenty years. Examination of this case disclosed that the patient had persistent low temperature ranging from 97 to 98.2 F., and when his temperature was brought up to normal by stimulation or supplying artificial heat his symptoms would disappear. He had been fed on remedies for rheumatism without relief until the whole gamut of the Pharmacopeia had been exhausted. This patient obtained almost complete relief by spending a few months in a warm climate, meanwhile taking much physical exercise, which increased the efficiency of his heat mechanism and established a higher temperature range.

METHOD OF RESEARCH

In the interpretation of rheumatic symptoms two general divisions of the subject should be made. First, are the symptoms caused wholly by local morbid processes? Second, do they arise from metastasis? Before any intelligent study of the phenomena can be undertaken these two questions must be settled. Very clearly work of this character will, at times, involve much time, patience, observation and laboratory investigation; but the grave importance of a clear understanding as to all the facts demands that no physician should be contented with empiric treatment when handling an infection causing rheumatic fever. No mild and harmless infection is bringing about such manifestations, and it is the duty of a physician to locate accurately the source of absorption and if possible the kind of infection. If a careful inquiry is made into all the symptoms presented in cases of rheumatic fever I do not think one will fail to find some source of infection from which absorption is taking place; and having entered the circulation it makes its presence more pronounced by affecting sensitive and susceptible tissues and perhaps creating secondary foci. There is not sufficient evidence at hand to justify a theory that rheumatic infection like malarial infection gains entrance to the circulation and in that medium finds conditions suitable for its growth and liberation of toxins; but there is substantial reason for believing that the mucous surfaces are the seat of infection from which absorption occurs, and I am reasonably sure that further observations will show that the intestinal mucosa furnishes a large list of these infections. The arthritic, endocardial and pericardial involvements should be viewed as secondary results or the local manifestations of bacteria, their toxins or both acting on susceptible tissues.

REPORT OF CASES

While I was preparing this paper two more cases have come to my attention confirming the theory of primary intestinal infection in rheumatic fever:

CASE 1.—The patient was a girl, aged 17, whom I saw in consultation with Dr. Walter Culin, of Coquille, Ore. At first she had prodromal symptoms lasting two months which were characterized by general lassitude, indefinite mild chills and constipation. When the acute symptoms were precipitated the intestinal involvement was quite pronounced. Her attending physician thought at first he was dealing with a case of ptomain poisoning but as the case progressed arthritic symptoms developed and since that time it has presented the appearance of typical polyarthritis of rheumatic fever. The temperature in this case has been as high as 106 but when I saw the patient about two weeks after being confined to bed, there was a temperature of 101, respiration twenty-four, meteorism, constipation, stools showing considerable mucus, polyarthritis and sweating, with no enlargement of the spleen or cardiac involvement.

CASE 2.—The patient, a man aged 36, has chronic rheumatism. This patient at the age of 6 years had a very severe attack of inflammatory rheumatism and he informs me that he has had light recurring spells ever since and they are preceded by what he terms bilious attacks. He has a tendency to constipation and requires the continual use of physic to regulate his bowels. Two years ago this patient had an attack of rheumatic purpura which covered a considerable portion of the body; this condition was finally cleared up by the use of active purgatives continued over several days.

CONCLUSIONS

In the absence of any personal information to the contrary, I believe that I am presenting two original ideas in this report:

1. In many cases of rheumatic fever the initial seat of the infection is in the intestinal tract, from which absorption of bacteria and their toxins occurs; on entering the circulation these cause peripheral symptoms in susceptible tissues.

2. Chronic or recurring attacks are or may be due to the continuance of the bacteria of rheumatic fever in the intestinal tract in an attenuated condition and are aroused to activity by dietetic, hygienic environmental errors of the patient which cause a reduction in metabolic activity and natural resistance.

TRANSPLANTABILITY OF MALIGNANT TUMORS TO THE EMBRYOS OF A FOREIGN SPECIES *

JAMES B. MURPHY, M.D.
NEW YORK

It appeared early in the development of modern surgery that tissues of lower animals could not be ingrafted into human beings. The extent of this barrier between species was not fully appreciated until the discovery of the transplantability of tumors. It was soon demonstrated by experiment that tumors of lower animals not only fail to grow when inoculated into another species, but often fail or give only slight growth, when grafted into a different variety of the same species. For example, the tumors of the white mice usually fail to "take" when inoculated into the gray or brown mouse. Recently Rous[1] has reported a tumor of a pedigreed chicken, from the first inoculations of which tumors resulted in none other than blood-related individuals; and only after the malignancy had become greatly increased by repeated transfer did growth take place in other varieties of chickens.

The idea of the specificity of transplanted tumors has become so firmly established among students of cancer research that the fact of a new growth of any kind proving transferable to another species is considered evidence against the growth being a true neoplasm. The views entertained of genital tumor of the dog transplanted to the fox, and a tumor of the hare successfully inoculated into the rabbit, serve as examples of this.[2]

Ehrlich[3] was the first to demonstrate that while tumors of one species cannot be transferred, in the true sense of the word, to a foreign species, yet such tissue when introduced into a closely related species may survive for a short time (from eight to ten days) and the cells actually multiply. If the tissue during this period is returned to the original species, it seems unaffected by its sojourn in the foreign host and is capable of producing an actively growing tumor. If, however, the graft is allowed to remain, or is transferred to another host of foreign species, it soon dies and is absorbed. These observations are accounted for by Ehrlich on the theory that tumor cells lack proper receptors to combine with the food elements of the foreign species and die from lack of nourishment. He considers that enough specific food is carried along with the graft from the original host to account for the temporary survival and growth. When this supply is exhausted the cells quickly die.

We reported last year[4] the successful inoculation of the Rous chicken sarcoma into the developing chick embryo. In the course of this study the important observation was made that the tumor grew well in the developing pigeon or duck embryo, whereas in the adults of these species it quickly died and was absorbed. This fact suggested a wide difference between the embryo and the adult in their reaction to foreign tissues. The embryo, we might say, either provides a food substance utilizable by these tissues, which is lacking in the adult, or else lacks a defensive mechanism against such an invasion, which is possessed by the adult. The following results, obtained with tissues of a more distantly related species, constitute another and much more remarkable instance of similar kind.

Following the technic described in former papers,[4] I inoculated a fine hash of the Jensen rat sarcoma into the outer membrane (fused chorion and allantois) of five-day to seven-day chick embryos; these were then incubated from ten to twelve days, that is, to within two days of hatching. When the shell was removed and the membrane cut and turned back, in a high percentage of instances the egg was found to have, at the point of inoculation, a rounded globular mass, suspended from the membrane by a broad flat pedicle. The masses varied in size from 0.2 to over 2 cm. in diameter. The consistency was that of a firm jelly, varying in color from pinkish-gray to red. The surface was smooth and glistening, with numerous large dilated vessels coursing over it, and smaller vessels were visible in the semitranslucent substance of the tumor itself. On section the masses were found to be solid and composed throughout of this pinkish-gray, somewhat translucent tissue, with small

* From the laboratories of the Rockefeller Institute for Medical Research.

1. Rous: Jour. Exper. Med., 1910, xii, 696.

2. Von Dungern and Coca: Ztschr. f. Immunitätsforsch., 1909, ii, 391. Von Dungern: Munchen. Med. Wchnschr., 1912, lix, 238.

3. Ehrlich, P.: Arb. a. d. k. Inst. f. exper. Therapie, 1906, No. 1, p. 84.

4. Murphy, J. B., and Rous, P.: Tumor Implantations in the Developing Embryo; Experiments with a Transmissible Sarcoma of the Fowl, THE JOURNAL A. M. A., March 11, 1911, p. 741; Jour. Exper. Med., 1912, xv, 119.

areas of hemorrhage in some cases. The tissue was quite moist and friable.

In the rat the Jensen tumor is made up microscopically of characteristic large spindle-cells, with a clear vacuolar nucleus and a fairly deep-staining protoplasm. The cells lie close together, with little stroma, or intercellular substances. Thin-walled blood-vessels are fairly frequent, and occasionally mitotic figures are seen. The cells of the new tumors grown in the chick embryo have an almost identical structure with those of the tumor grown in rats. The cells, however, are not so compact, in some cases forming only a loose network, with clear spaces between. Mitosis is extremely frequent, almost every field showing some stage of this process, and as many as five such figures have been seen in an area taken in by the oil-immersion lens. The blood-vessels filled with nucleated chicken blood-cells are numerous, budding out from the membrane in large tufts. There is practically no stroma, except a slight amount carried with the vessels. The surface of the mass is covered with a continuation of a thin layer from the chick membrane.

The results in the adult chicken are very different. Here the tissue of the Jensen sarcoma is so quickly destroyed that few of its cells remain intact after twenty-four hours. That in the embryo the rat cells retain their biologic characters is shown by the fact that the tissue, when returned to the rat after a sojourn of from ten to twelve days in the chick, causes an actively growing tumor of the Jensen type.

The results obtained up to this stage of the experiment, that is, the active growth of cells in a foreign species over a period of from ten to twelve days, might possibly be accounted for in the same manner that Ehrlich explains the survival and slight growth of the mouse sarcoma in the rat. The results are hardly comparable, however, when it is considered that in the embryo the cells at the twelfth day are still in a state of active growth, with no indication of degeneration or of a defensive reaction on the part of the host; while in the Ehrlich experiments only the outermost cells survive, and there is a marked defensive reaction on the part of the foreign host. The next experiments remove any doubt as to the untenability of the Ehrlich theory in explaining the case.

It was found that the tissue of the tumors formed in the membranes of the chick by the inoculations with the Jensen rat sarcoma would continue to grow if implanted in another developing chick embryo. The tumors resulting from the second series of inoculations were similar in every respect to those of the first. In like manner a third and fourth successful transfer could be made. This is the stage I have at present reached, with a total of forty-six days of continuous growth of the rat tumor in the chick embryo. The tumors at this stage are similar to those of the original inoculation. The cells retain their form and structure unaltered, are fairly compact, and show numerous mitoses. No degeneration or irregularity of the division figures occurs. Tissues from the second and third transplantation series when returned to the rat caused actively growing tumors. No inoculations were made from the fourth series into rats, as the tissues were needed for other purposes.

It would naturally be expected that after so long a dependence on a foreign food there might be some change in the direction of an adaptation on the part of the rat cells to the new conditions. That this change cannot be marked, however, is shown by the fact that the rat tissue, grown for so long a period in the chick embryo, is almost as quickly killed when introduced into the adult chick as is the tissue taken direct from the rat. There is, perhaps, a slight difference in the reaction on the part of the adult to such inoculations. This point will be discussed in a subsequent paper.

A variety of other tissues have been found to grow quite as well as the Jensen tumor when inoculated into the chick. I have grown in this way, for periods varying from seven to twelve days, chick embryonic tissue, rat embryonic tissue, a sarcoma, a carcinoma and a chondroma of the mouse, and the Flexner-Jobling adenocarcinoma of the rat. The rat embryonic tissue and the mouse sarcoma and carcinoma were successfully reinoculated into the original species after growth in the foreign embryo.

CONCLUSION

It is here shown conclusively that mammalian tumor tissue can live and grow actively in the chick embryo, although in the adult chicken it quickly dies and is absorbed. By transfer from one embryo to another the mammalian tissue can be kept growing continuously in the avian host for as long as forty-six days, and probably indefinitely. This proves beyond doubt that the mammalian cells are able to utilize the food supplied by the avian embryo. Whether the phenomenon is dependent solely on this factor, or whether the absence of a defensive mechanism in the embryo plays the more important part is a subject which is being studied and on which a report will be made later.

Sixty-Sixth Street and Avenue A.

THE WATER PURIFICATION WORKS OF THE BALTIMORE COUNTY WATER AND ELECTRIC COMPANY*

S. T. POWELL
Chemist and Bacteriologist
BALTIMORE

Probably there is no body of professional men that more fully realizes the value of pure drinking-water than does the medical fraternity. The physician can wholly appreciate what pure water-supply means to any community and the part it plays in the prevention of certain infectious diseases. For this reason it is believed that the description of the water purification plant of the Baltimore County Water and Electric Company will be of particular interest as it shows to what extent a privately owned water company has carried its purification work in safeguarding its consumers against disease.

The filtration plant of this company is situated at Avalon, Baltimore County, Md., which is about 9½ miles southwest of Baltimore, and the water filtered is pumped thence to a dozen or more suburban places in the immediate vicinity of the city. The plant is novel in many respects but particularly in that there are both slow sand and mechanical filters which are operated daily under identical conditions. This fact has afforded an opportunity for studying the relative values of the two types of filters, a condition which, so far as is known, exists at no other place in the country, except on an experimental scale.

The unfiltered water is drawn during the greater part of the year from Rockburn Branch, a small spring

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

stream in Howard County. This stream, which is only 2 miles in length, flows through a sparsely populated territory and empties finally into the Patapsco River. The water is usually clear and contains but a small amount of suspended matter and color although whenever there are heavy rains it becomes quite turbid, because of surface washings from the steep hills near by. When there is not enough water in this stream to supply the filters the deficiency is taken from an impounding reservoir about one-half mile above the plant. The reservoir water comes partly from springs and partly from infiltration from the Patapsco River through the reservoir banks. The quality of this water, although not seriously polluted, could not in its raw state be considered safe for drinking at all seasons of the year. The raw water runs to the plant and on the slow sand beds by gravity, but is raised to the mechanical filter by a centrifugal pump which is operated by a vertical direct-connected Wagner motor.

The slow sand filters consist of two units, having a combined filter area of approximately one-half acre and a capacity of 1.25 million gallons per day. Each unit is operated independently of the other so that either may be cleaned while the other is in service. The sand beds are 34 inches in depth and rest on 16 inches of crushed stone and gravel. The filters are equipped with the usual regulating devices for maintaining a constant head of water on the sand and a uniform rate of flow through the beds.

For the past two years the cleaning of the beds has been done by the Brooklyn method, which is accomplished by allowing water to flow over the sand while men rake the surface. To facilitate cleaning by this method each unit was divided into sections or channels 4 feet wide across the width of the bed by means of pine boards imbedded in the sand and rising 6 inches above the surface of the bed. The head of water necessary is obtained from unfiltered water on the other slow sand unit which is in service. Cleaning the filters by this method has given entire satisfaction and is much cheaper and requires less time than scraping and removing the *Schmutzdecke*.

The filtered water from both units empties into the clear water well and is mixed with the filtered water from the mechanical filters. The average length of time between cleaning of the beds during 1911 was thirty-seven days and sixteen hours. These beds are operated during the whole year excepting when the turbidity of the raw water is greater than 100 parts per million, during which times they are out of service. High turbidities plug the bed so rapidly that it was found that it was not economical to operate the beds at such times. The chemical and bacterial efficiencies from these filters have been excellent as will be seen from the accompanying table.

MECHANICAL FILTERS

There are two mechanical filters each having approximately 200 square feet of filter area and combined filter capacity of 1,025,000 gallons per twenty-four hours. The depth of the sand in these filters is 34 inches and it rests on 8 inches of gravel. The gravel prevents the sand from being washed into the collecting system at the bottom of the beds. The rate of flow through the filters is kept constant by automatic controllers and each unit is equipped with a gauge which registers the height of water on top of the sand and also indicates when the bed is dirty and requires cleaning. The filters are washed with filtered water under a pressure of 20 pounds per square inch and the sand is agitated by compressed air under 3 pounds' pressure. In connection with the filters there is a sedimentation basin holding 160,000 gallons, or about four hours' supply for the filters. The alum which is used in this process of filtration is applied to the water in the form of a solution as the water enters the sedimentation basin. As it requires four hours to pass through here, there is ample time for the alum to unite with the alkaline salts in the water, which is necessary to form the coagulant, and sufficient time for sedimentation. The treated water from the basin flows directly on the filter beds where the final purification takes place.

Hypochlorite of lime is used on these filters and is applied to the water as it passes from the basin just before the water reaches the filters. The bleaching powder is fed to the water in a 0.5 per cent. solution, through a graduated orifice which is calibrated to read in grains of bleach per gallon of water filtered. The amount used varies from 0.04 to 0.1 gr. per gallon of water or from 0.2 to 0.6 parts per million of available chlorin. Hypochlorite of lime is used, not because the filters have failed to produce adequate bacterial purification, but because it was found by actual operating tests that it was much more economical in the operation of the plant. By the use of hypochlorite it was possible to reduce the amount of alum necessary to obtain high bacterial efficiencies, which thereby increased the length of runs between cleaning the filters and reduced the quantity of water necessary to clean the beds.

The length of time between cleaning the beds varies from ten to forty hours directly according to the amount of suspended matter in the unfiltered water. The alum applied to the water is regulated according to the turbidity present and like the hypochlorite of lime solution is fed through a graduated orifice calibrated to read in grains per gallon of water filtered.

In the mechanical filter-house is a sample pump which is operated constantly and delivers water from each filter unit as well as the raw and treated water so that samples of water for analytical purposes may be taken at any time.

The company maintains its own laboratory for chemical and bacteriologic analysis of the water. The laboratory has many novel features the chief of which, perhaps, is the electrical operation of practically all the apparatus used, much of which was especially designed for the particular need of the work at hand.

Samples of the unfiltered and filtered water are analyzed many times each day for a thorough knowledge of the water so as to maintain the filters at their highest degree of efficiency.

The chemical and bacteriologic work is all done according to the standard method of water analysis compiled by the American Public Health Association. The routine culture medium for determining the number of bacteria per cubic centimeter is nutrient gelatin and the plates are incubated at 20 C. For special work agar-agar and Endo's medium are frequently used.

Owing to the great number of *Bacillus coli* determinations that are made, these are only presumptive tests; but the determinations are made according to the standard methods. Such tests I believe to be quite as valuable for routine work in testing the efficiencies of filters as the more lengthy determinations. All *B. coli* samples are incubated at 40 C., which temperature has a tendency to eliminate all bacteria other than organisms that are capable of growing under these conditions.

The accompanying table gives the results of the average chemical analyses of the unfiltered and filtered water during the past four years.

It has been impossible to compile with any degree of accuracy the mortality or morbidity rates from typhoid fever among users of this water. The reason for this is that many of the consumers conduct business in Baltimore where the water-supply is unfiltered, and many have private shallow well-supplies which they persist in using, although a recent investigation undertaken by the company showed that 90 per cent. of these well-supplies are seriously polluted. As far as is known, not a single case of typhoid fever has ever been traced to the use of this supply.

CONCLUSION

It will be seen from the table given herein that both systems of filters have produced high bacterial efficiencies, and the results in general have been quite uniform irrespective of the great fluctuation in the quality of the raw water. Careful interpretation of these results shows that either method when properly operated is capable of producing safe drinking-water, but it depends on local conditions as to which installation will be more economical. The cost of filtration by the slow sand method at Avalon is $8.85, and by the mechanical $9.16 per million gallons. These figures represent interest on investment, depreciation, operation and operating management. These comparative costs cannot be taken entirely as a criterion as it must be remembered that there is no sedimentation basin in connection with the slow sand plant, and that the filters are cut out of service when the turbidity of the raw water is above 100 parts per million.

TABLE SHOWING AVERAGE RESULTS OF THE CHEMICAL ANALYSES OF THE RAW AND FILTERED WATER OF THE BALTIMORE COUNTY WATER AND ELECTRIC COMPANY

	Unfiltered Water	Filtered Water	
		Mechanical	Slow Sand
Color	23.0	0.0	3.5
Odor	None	None	None
Alkalinity	23.0	17.0	24.0
Turbidity	65.0	0.0	1.0
Total residue at 230 F.	100.0	65.0	66.0
Volatile residue	35.0	17.0	21.0
Ignited residue	65.0	48.0	45.0
Chlorin	3.90	3.95	3.90
Nitrogen as free ammonia	0.0620	0.0240	0.0150
Nitrogen as albuminoid ammonia	0.1883	0.0640	0.0470
Nitrogen as nitrates	0.4170	0.4300	0.4700
Nitrogen as nitrites	0.0030	0.0008	0.0007
Sulphates calculated as SO—			
Required oxygen	2.71	0.75	0.78
Dissolved oxygen—			
Iron	1.24	0.32	0.31
Carbon dioxid (CO)	3.0	4.00	3.0
Hardness	35.60	37.92	35.89

ABSTRACT OF DISCUSSION

DR. C. HAMPSON JONES, Baltimore: The outskirts of Baltimore, a large territory, are covered by neither one of the two water-supply plants, and while nothing can be shown concerning typhoid fever yet the bacteriologic result will certainly warrant one in believing that any typhoid infection that might be in the raw water has been effectually removed.

MR. A. H. WEHR, Baltimore: We have endeavored to ascertain the number of typhoid cases in our area, but we do not have a local health department as efficiently conducted as is that in our city under Dr. Jones' direction, and we have to rely, to a very large extent, on the general information which the state board of health has; further than that, there are a great many people in our immediate territory who still rely on their local wells; some of them are some little distance removed from the public water-supply, because it is a suburban or rural community. For that reason we cannot take the returns and apply them directly to our conditions, but I think the typhoid situation in the suburbs of Baltimore is in very good condition. I do know that, in towns in our territory which previously had to depend on local water-supplies and have had typhoid epidemics, since the introduction of our public supply they have had no such epidemics, so that all we can say is, that so long as there is no typhoid, we can at least take unto ourselves a certain amount of credit for eliminating it.

A NEW REGULATING DROPPER FOR ETHER OR CHLOROFORM, USABLE ON ANY CONTAINER

FRANK WILCOX PINNEO, M.D., NEWARK, N. J.

Surgical anesthesia combines in large measure both science and art; science in the profound effect of anesthetics, art in the great difference, in safety and well-being of the patient, between skilled and thoughtless administration.

The present time is demanding a finer discrimination between methods. The aim is to approach the "ideal anesthesia," one factor in which is perfectly even administration. Success in the prevailing use of the drop method with ether is hampered by intermittent application of the anesthetic, whereas there should be a steady dropping of the ether. But no suitable dropper has been hitherto made which combines efficiency with simplicity and availability for universal use. The one shown herewith has been designed to fill this need of regulating.

A regulating dropper for ether (or chloroform), usable on any container.

It is a double tube—inlet for air, outlet for anesthetic—with a needle valve in the latter, so placed that a finger easily screws it down to any degree of frequency of drops or opens it to a full large stream. Quickly punched through any cork it has the following advantages:

1. It can be used in any bottle or ether can.

2. It accomplishes an evenness of administration necessary to a perfect anesthesia.

3. It economizes ether, as wasteful evaporation is minimized.

4. It increases efficiency as ether when dropped on the mask is better volatilized and warmed.

5. It allows pouring ether when used for other methods.

6. It can be used for chloroform, which demands even greater accuracy in dropping.

7. It is, therefore, useful in obstetrics, the physician adjusting the drop before entrusting it to his assistant (often unskilled).

8. It has no bottle, or other part necessary to it, which, if broken or lost, destroys it.

9. It is so inexpensive and easily carried by mail that it has universal usefulness.

199 Garside Street.

LOCALIZED GANGRENE FOLLOWING THE USE OF QUININ AND UREA HYDROCHLORID

H. H. RIGHTOR, M.D., HELENA, ARK.

For some time I have been using the 1 per cent. solution of quinin and urea hydrochlorid, marketed in ampoules, as a local anesthetic, with very satisfactory results.

In the following instance the results might have been very disastrous.

R. C., a white man, aged 20, had just recovered from gonorrhea and was a splendid subject. The ordinary technic for the use of local anesthesia in circumcision was pursued. A rubber catheter was tied around the penis and the quinin solution injected in the line of the proposed skin and mucous membrane incision. The prepuce was removed in the usual way, and the skin sutured to the mucus membrane without the removal of any of the membrane. There was absolutely no sensation, faintness or nausea following the operation. The next morning the penis was very much swollen and of a violet hue; there was still no sensation. The patient left for his home in the country to return on the fifth day, at which time the discoloration was still present and there was still no pain. The silkworm sutures were removed at this time.

I saw the patient forty-eight hours later. There was a very foul odor, and a well-marked localized gangrene extending exactly to the end of the line of infiltration on both the mucous and the cutaneous sides of the incision. There was no suppuration at any time. With tissue forceps this gangrenous area was lifted out *en masse*, leaving a raw surface about an inch wide in the region of the frenum and one-half inch wide for the remainder of the circumference of the penis.

Fortunately no considerable amount of the prepuce had been removed, so that in a few days I was able again to approximate the skin and mucous membrane, except under the frenum. This line of sutures held and in a week was practically well, except for a short distance where the edges could not be approximated.

CLOSED EMPYEMA OF THE ETHMOID AND FRONTAL SINUSES PRODUCING MARKED EXOPHTHALMOS

F. H. BRANDT, M.D., BOISE, IDAHO

The infrequency with which the ethmoid and frontal sinuses take part in producing displacement of the eyeball prompts me to report the following case which illustrates the extent to which this can occur without serious injury to the eye structures:

History.—The patient, Mr. J. P., aged 34, consulted me March 1, 1912, for an enlargement and displacement of the left eye, giving the history of having been taken ill with severe pain in this eye after a cold of two or three days' duration. This pain lasted three days. Since then the eye had been comfortable except for the gradual development of the swelling with its accompanying symptoms of congestion and conjunctival irritation, which has been going on for seven weeks altogether.

Examination.—The eye protruded three-quarters of an inch forward, 1 inch to the side and about three-quarters of an inch downward. The conjunctiva was greatly injected, almost venous in character; the cornea was clear and the iris functionating, but the pupil was more dilated than on the other side. Ophthalmoscopic examination showed the papilla to be mottled and its outlines indistinct; the arteries were contracted while the veins were distended and tortuous; one could well make out the swollen papilla by the course of these veins. Vision was very blurred, only 20/70. The field of vision for red and white was concentrically contracted. From these findings I diagnosed some process pushing out the eyeball. Examination of the nose seemed quite negative at first, except for a large middle turbinate on the left side; there was apparently no discharge from the middle meatus. Not being satisfied, I punctured the middle turbinate, and found a discharge of pus. The tentative diagnosis was an ethmoid abscess.

Operation.—Resection of the middle turbinate and entire removal of the ethmoid, which had undergone necrosis to a large extent, and perforation of the orbital plate were done under local anesthesia. An unsuccessful attempt was made to go into the frontal sinus. The cavity was loosely packed with xeroform gauze, which was removed the next day.

The result of this operation was a gradual return of the eye into its socket; it returned very promptly toward the median line, but a slight forward and slightly downward dislocation still persisted; as the discharge from the nose had about cleared up I sent the patient home with instructions to report should more displacement recur or a swelling appear above the eye. About a month after the first operation, a tumor about the size of a small hazel-nut was seen just below the orbital ridge and just outside of the supra-orbital notch.

The next step was a radical frontal sinus operation—the usual curved incision and removal of the floor of the sinus far enough back so that all parts of the sinus could be reached; no opening was made above the orbital ridge, as the upper part of the sinus could readily be reached from below. A perforation was found in the floor corresponding to the tumor below the ridge. The sinus was thoroughly curetted and the frontonasal duct enlarged, which, by the way, was only a little slit. The entire cavity was packed with iodoform gauze, with the strip protruding into the nose and the incision was closed with the exception of a small drain at the lower angle. The gauze was slowly removed through the nose in the course of a week, and a rubber tube, provided with a collar to keep it in place, was substituted therefor.

The external wound healed by first intention and the eyeball has returned to its normal place. Drainage through the nose was carried on very effectively, and the rubber tube was left in for two months, at which time there was no discharge, outside of some mucus. Diplopia did not occur following the last operation. The vision, as far as I can tell, has returned to about normal; the patient sees 20/30, which is a little less than in the right eye. The color fields are also a little smaller than on the other side. Bacteriologically the case showed nothing distinctive.

Interesting points in the case might be summarized as follows:

1. Absence of pain outside of the first three days.
2. No lasting rise of temperature. For two days it was 99.5 F.
3. Absence of permanent injury to the eye.
4. Absence of facial deformity following the operation.

POSTOPERATIVE HICCUP

WILLIAM F. DOOLITTLE, M.D., CLEVELAND

The following briefly described experience with a case of persistent singultus attending an appendectomy has some features of practical interest.

F. F., man, aged 38, American, machinist, developed an ordinary attack of appendicitis for which I operated at the end of thirty-six hours, when the symptoms were becoming more marked in spite of medical remedies. After removing the enlarged congested appendix containing considerable pus distal to a stenosed lumen, the abdominal incision was closed in the usual manner. The effects of the ether passed off uneventfully except for some slight irritation of a former mild bronchial catarrh which had come on in the line of his work.

On the second day, however, the patient developed a marked attack of hiccup which became more frequent and, under the circumstances, soon began to take his strength to a very noticeable degree. He had never previously been specially troubled with this disturbance. This diaphragmatic spasm ceased when the patient fell asleep, only to reappear as obstinately as ever on his awakening.

Various remedial agents were used in turn: oil of amber, Hoffmann's anodyne, ether sprayed on the epigastrium, inhalation of nitrite of amyl, counterirritation over the diaphragm, holding of the breath, psychic effect of fright, etc. There were no noticeable results.

On the third day of the attack, with the clonic spasm at its height, I passed a stomach-tube on the theory that its passage through and dilatation of the esophageal opening of the diaphragm might have a beneficial reflex effect on the phrenic and sympathetic nerves of that organ.

As the tube reached the stomach no pentup gas or fluid escaped, but the hiccup happily ceased immediately and the tube was promptly removed. In about an hour, however, the attack returned, but was instantly relieved by reinserting the stomach-tube. It remained away only two hours, but again yielded at once to the treatment. The fourth and final attack, after the lapse of about two hours more, was likewise overcome.

The further convalescence was complete and uneventful.

9510 Euclid Avenue.

A CASE OF ASYMMETRICAL, BILATERAL HERPES ZOSTER

CHARLES A. MOBLEY, M.D., VAN WYCK, S. C.

History.—The patient, a German-American woman, aged 66, gave a history of rheumatism and heart disease. I was called to see the patient on the morning of June 9, 1912. The previous day the patient had suffered with severe burning pains on the face and neck, and on awakening that morning had found a vesicular eruption in this region.

Examination.—The typical vesicular eruption of herpes zoster was found following the course of the left facial and the posterior auricular nerves, with scattered patches on the side of the neck and in the hair. None passed the median line of the head. The contents of some of the lesions were puriform. The temperature was 100; pulse 90. A mitral regurgitant murmur was heard on auscultating the chest.

From twenty-four to thirty-six hours after the first eruption the patient experienced a burning sensation in the right side of the chest, and shortly afterward vesicles developed along the course of the intercostal nerve at the seventh interspace. The majority of the lesions of this second eruption on the right side were hemorrhagic. Temperature at this time was 102; pulse 110. The lesions on the left side of the face and neck were still present.

Remarks.—An eruption of herpes zoster occurring on both sides of the body at the same time, and at different body planes, seems so rare from my search of the literature on the subject that I feel justified in reporting this case.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

NEOSALVARSAN.—Neosalvarsan is a mixture of sodium 3-diamino-4-dihydroxy-1-arsenobenzene-methanal-sulphoxylate, $NH_2.OH.C_6H_2.As:As.C_6H_2.OH.NH(CH_2O)OSNa$, with inert inorganic salts. The arsenic content of three parts of neosalvarsan is approximately equal to 2 parts of salvarsan.

Neosalvarsan is prepared by precipitating a salt of 3-diamino-4-dihydroxy-1-arsenobenzene with sodium methanal-sulphoxylate and dissolving the precipitate in alkalis. From the resultant solution neosalvarsan is obtained by the addition of alcohol or acetone, or by evaporation of the solution in a vacuum.

Neosalvarsan is an orange-yellow powder possessing a peculiar odor. It is very unstable in the air. Neosalvarsan is readily soluble in water, yielding a yellow solution which is neutral toward litmus. Upon standing the aqueous solution becomes dark brown forming a brown precipitate.

A freshly prepared aqueous solution of neosalvarsan (1 in 100) yields a precipitate on the addition of mineral acids.

If silver nitrate test solution be added to an aqueous solution of neosalvarsan (1 in 100) a brownish color should be produced quickly followed by the formation of a black precipitate.

If ferric chloride test solution be added to an aqueous solution of neosalvarsan (1 in 100) a violet color should be produced which soon changes to a dark red.

If to 10 c.c of the aqueous solution of neosalvarsan (1 in 100) 5 c.c. of diluted hydrochloric acid be added and the mixture heated, the irritating odor of sulphur dioxide will be evolved. If to 10 c.c. of the aqueous solution of neosalvarsan (1 in 100) 5 c.c of diluted hydrochloric acid be added, the precipitate collected on a filter and treated with zinc dust and warm, diluted hydrochloric acid in a test tube, and if paper moistened with a 5 per cent. cadmium chloride solution be held in the mouth of the tube, the paper should be stained yellow within a few minutes (distinction from *salvarsan*.)

If to 10 c.c. of the aqueous solution of neosalvarsan (1 in 100) 5 c.c of diluted hydrochloric acid be added, the precipitate removed by filtration, 2 c.c of barium chloride test solution added to the filtrate, the mixture allowed to stand for 12 hours, the precipitate of barium sulphate removed by filtration, 5 c.c of nitric acid added to the filtrate, the mixture boiled and evaporated to dryness, the residue should not be completely soluble in 50 c.c of hot water slightly acidified with hydrochloric acid.

The arsenic content of neosalvarsan may be estimated according to the method described in Reports of the Chemical Laboratory of the American Medical Association, vol. iii, p. 97.

Actions and Uses.—Since neosalvarsan is merely a soluble compound of salvarsan, its actions and uses are the same as salvarsan, which see.

Dosage.—Neosalvarsan is said to be tolerated better than salvarsan, and consequently may be employed in larger doses. The average single dose for men is 0.75 gm. (12 grains) with 0.6 gm. (9.5 grains) and 0.9 gm. (14 grains) as the minimum and maximum doses. For women, 0.6 gm. (9.5 grains) as the average, 0.45 gm. (7 grains) and 0.75 gm. (12 grains) as minimum and maximum. Children may be given from 0.15 gm. (2 grains) to 0.3 gm. (5 grains). 1.5 gm. (22 grains) for men and 1.2 gm. (19 grains) for women should be regarded as a maximum dose.

Neosalvarsan may be administered by intravenous or intramuscular injection, the former being considered decidedly preferable, but, owing to the danger of infiltrations, it must not be administered subcutaneously. For intravenous injections 25 c.c. of freshly distilled water should be used for each 0.15 gm. of neosalvarsan. For the intramuscular injection 3 c.c. (45 minims) of freshly distilled water should be used for each 0.15 gm. (2½ grains) of neosalvarsan, this yielding an approximately isotonic solution.

Solutions should be freshly prepared, from freshly distilled, sterile cold water, or, if this be unavailable, with well boiled and cooled tap water.

Solutions of neosalvarsan must be injected immediately after their preparation. Neosalvarsan solution must not be warmed and the temperature of the injection fluid should not be above 20 to 22 C. (68 to 71.6 F.).

Manufactured by Farbwerke vorm. Meister, Lucius and Bruening, Hoechst, a.M., Germany; (Victor Koechl & Co., New York). German patent No. 245,756. U. S. patent applied for. U. S. trademark.

Neosalvarsan, Dose 1.—Each sealed tube contains neosalvarsan, 0.15 Gm. (2 $^{3}/_{10}$ grains).

Neosalvarsan, Dose 2.—Each sealed tube contains neosalvarsan, 0.3 Gm. (4 $^{6}/_{10}$ grains).

Neosalvarsan, Dose 3.—Each sealed tube contains neosalvarsan, 0.45 Gm. (6 $^{9}/_{10}$ grains).

Neosalvarsan, Dose 4.—Each sealed tube contains neosalvarsan, 0.60 Gm. (9 $^{2}/_{10}$ grains).

Neosalvarsan, Dose 5.—Each sealed tube contains neosalvarsan, 0.75 Gm. (11 $^{5}/_{10}$ grains).

Neosalvarsan, Dose 6.—Each sealed tube contains neosalvarsan, 0.9 Gm. (13 $^{8}/_{10}$ grains).

SALOQUININE (See N. N. R. 1912, p. 195).

Manufactured by the Vereinigte Chininfabriken, Zimmer & Co., Frankfurt a.M., Germany, (Merck & Co., New York).

ARTICLES ACCEPTED FOR N. N. R. APPENDIX

Kalle & Co., New York.

Menthol-Iodol.—A mixture of iodol, 99 parts, and menthol, 1 part. Trademarked in Germany. No U. S. patent or trademark.

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[For other information see second page following reading matter]

SATURDAY, SEPTEMBER 14, 1912

A NEW THEORY OF PROTEIN METABOLISM

The story of metabolism cannot fail to hold the attention of any group of men whose interests center in the functions of the living body; for it involves the special factors that dominate the activities of the organism. It is still much too early for profitable speculation on the causes of the complex and obscure changes which determine these reactions. After forty years of untiring effort in this field the master student of nutrition, Carl Voit, had to content himself with saying, in 1902, that "the unknown causes of metabolism are found in the cells of the organism." The chemical dynamics of the cell are still the subject of controversy and hypothetical discussion.

There are facts as well as theories of nutrition. We know that the nitrogen of our protein intake is soon represented by certain relatively simple nitrogenous end-products in the excretions. What are the transformations which have been experienced in this interval? That is one of the leading questions in the study of metabolism.

There was a time, not very long ago, when it was supposed that ingested protein was absorbed in a form little altered beyond the point of a thoroughly soluble and diffusible product. When the difficulty of detecting the absorbed material in the blood-stream beyond the alimentary wall began to manifest itself, recourse was had to the theory of regeneration. The products of absorption were assumed to be reconstructed into typical protein, in which form the ingested material is sent on its way through the blood-stream. When the newer knowledge of the digestive processes brought an appreciation of the profound cleavage which the protein molecule presumably undergoes in the alimentary tract prior to its absorption, a new set of problems was presented. Instead of proteoses or peptones the amino-acid degradation products now had to be followed and accounted for in their migrations from the intestine. Here again the newer products could not be satisfactorily demonstrated in the portal blood, and the hypothesis of a resynthesis of blood-proteins from the digestion fragments in the passage through the intestinal wall became a logical necessity. This point of view has been vigorously championed by Abderhalden.

The fact that there is no evidence of the increase of coagulable protein in the blood, such as would be demanded by the hypothesis of immediate regeneration, has likewise proved to be somewhat of a stumbling-block. Thus the way was opened for another hypothesis, that of deaminization. The discovery of relatively larger quantities of ammonia in the intestinal wall and portal blood than are found in other tissues warranted the belief that the protein fragments become denitrogenized in the course of their absorption, and perhaps further in the liver; so that the liberated ammonia nitrogen finds a speedy conversion into urea in the liver. The organism is thus rapidly rid of the undesired nitrogen, leaving the non-nitrogenous residue for useful application as a source of energy. This explanation has proved to be an attractive one in recent years.[1]

The student of the problems which have here been reviewed will readily discover that the lack of suitable analytic methods for the detection of small quantities of the various conjectured products of absorption has added to the uncertainty. Professor Folin and his co-workers in the Harvard Medical School have devoted much attention to this matter. The outcome of their efforts has been the perfection of technic designed to facilitate the following of the amino-acids and ammonia through the tissues and the circulation.[2] The result of their application has been to convince the investigators that no special deaminization process is located in the intestine, and that the ammonia in the portal blood is very small in amount and represents the absorption of ammonia produced in the intestinal lumen, chiefly by putrefactive bacteria. This dispels one hypothesis.

Equally surprising are the further conclusions[3] that the amino-acid products of digestion actually do pass into the circulation and that they are not held back by the liver but transported on to the other tissues. The accuracy of this account depends on the validity of the methods of analysis employed, and these still await confirmation from other sources. The positive findings are nevertheless decidedly more attractive, and in this case teleologically more reasonable, than the negative evidence on which the regeneration hypotheses have been based. We may, for the present, believe that the food protein reaches the tissues in the form of amino-acids and that those amino-acids which are not needed for the rebuilding of broken-down body material are not rebuilt into either protein or protoplasm, but are broken down and their nitrogen converted into urea.

Obviously no theory of this sort would be complete without some demonstration of the actual connection between the food amino-acid and the excretory urea. This has now been shown by Folin to exist. The rapid absorption of digestion products is followed by the appearance of urea in the tissues and the circulating

1. Compare Mendel, Lafayette B.: Theorien des Eiweissstoffwechsels, Ergebn. d. Physiol., 1911, xi, 418.
2. The details are described in the Jour. Biol. Chem., 1912, xi.
3. Folin and Denis: Protein Metabolism from the Standpoint of Blood and Tissue Analysis, Jour. Biol. Chem., 1912, xi, 161; xii, 141.

blood. There is, as yet, no positive evidence that deaminization and urea formation represent a specialized process confined to some particular organ. The absence of any apparent localization is in itself a strong indication that there is none; so that in view of their dominant rôle the greatest amount of urea is presumably formed in the muscles, according to Folin.

One other important finding deserves notice here. Ingested creatin and creatinin have not been observed to occasion a production of urea such as occurs when amino-acids are absorbed. This absence of demonstrable urea formation is in itself an argument against the hypothesis that these two products are extensively destroyed in the body. The fact is further in harmony with the current belief that the story of creatin and creatinin in metabolism, like that of the purins, must be sought in a different chapter from that which ends with the genesis of urea.

THE PROTECTIVE FERMENTS OF THE BLOOD AND A NEW TEST FOR PREGNANCY

For some years Abderhalden has been occupied with the study of the way in which the animal body protects itself against foreign substances that gain entrance into its interior. He had the idea that the processes involved were essentially metabolic in nature, and was thus led to investigate the occurrence of certain ferments in the blood-plasma under normal and experimental conditions. The results of these investigations are summarized and discussed by him in a recent monograph.[1] In view of their importance and interest, a brief statement of the principal results may be warranted.

Generally speaking, the substances taken into the body as food are subjected to various kinds of fermentative action, both before and after absorption from the digestive tract, whereby they are split up and rendered not only harmless but fit material for the purposes of nutrition and growth. The cells themselves harbor a number of ferments that can split fats, reduce carbohydrates and break up proteins and protein derivatives. While practically every cell in the body can carry on digestive processes, the blood-plasma of man and of many animals normally does not possess any digestive powers, at least for proteins, so far as is demonstrable with the methods now in use. It seems as if foreign substances requiring rapid cleavage normally do not enter the blood. This being the case, Abderhalden set to work to determine whether the blood-plasma acquires any new fermentative properties when foreign substances are introduced into the blood directly without first going through the digestive tract. Various protein substances were injected into dogs and rabbits, and invariably the plasma of animals so treated rapidly acquired the power to split proteins and peptones, but not fats and carbohydrates. The action of the newly formed ferments is seen very clearly by means of the polariscope, which shows that in digestion-mixtures made with the serum of injected animals the rotatory effect on light differs from that of mixtures made with normal serum. The digestive action of the serum of injected animals is demonstrable in other ways also.

The appearance in the blood of proteolytic and peptolytic ferments having been shown to follow the parenteral introduction of proteins, the next step naturally was to find whether similar results follow the injection of foreign, non-protein substances. The experiments on this point gave results confirmatory of those already obtained by Weinland, namely, that the injection of cane-sugar into the dog induces the appearance in the blood of invertin. Other sugars, notably milk-sugar, are also changed by the serum of dogs injected therewith, and such serums, as well as the serums of dogs injected with starch, invert cane-sugar also. It is remarkable that invertin should appear in blood-plasma as early as fifteen minutes after the intravenous injection of cane-sugar.

In the case of fats the conditions were found to be more complex; homologous fats appear to increase the fat-splitting power of the plasma, and the question whether foreign fats exercise a specific effect must be studied further.

As the ferments in question attack the substances which call them into the blood and thus no doubt protect the body, Abderhalden, like Heilner, designates them as protective ferments. Their origin and their relation to anaphylaxis, to the antibodies of the immunologist and to the ferments described by Vaughan in the serum of guinea-pigs injected with foreign proteins are questions that cannot be discussed now, but it may be pointed out that according to Abderhalden's work the proteolytic and peptolytic protective ferments do not seem to be nearly so narrowly specific in their range of action as the bodies concerned in the anaphylactic and other reactions of immunity are believed to be. It may be, however, that other methods of study will give different results; future investigations, no doubt, will throw light on these and other questions. Even as the matter now stands, it is clear that the presence in the plasma of protective proteolytic ferments may have a significance quite similar to that of antibodies because in both cases it concerns a reaction to the entrance into the body of foreign proteins. Thus Dick[2] has shown that in pneumonia the blood-serum contains ferments that digest the pneumococcus, and Abderhalden has discovered that in pregnancy the blood contains ferments that digest proteins and peptones derived from the placenta. He was led to this discovery by the conception that certain cells of the body may harbor constituents which are peculiar and foreign to the blood and which therefore on entrance into the blood lead to the production of special ferments. In order to test this possibility he made experiments with

1. Abderhalden, Emil: Schutzfermente des tierischen Organismus, Julius Springer, Berlin, 1912.

2. Dick: Jour. Infect. Dis., 1912, x, 384.

the serum of pregnant women and animals, as it is known that in pregnancy cells and fragments of the chorionic villi commonly enter the blood. The ferments discovered in this way appear to be largely specific for the placenta. By examination in a large number of pregnant women, Abderhalden has shown that such ferments are constantly present in pregnancy; they appear in the first month, and eight days after abortion or birth at term they are no longer demonstrable by the methods used (polariscope, appearance of peptone in the dialysate of mixtures of placental material and serum of the pregnant); similar ferments are present also in the serum of pregnant animals. The injection of animals, male as well as female, with placental tissue, extract or juice, produces ferments that digest the injected material. Here then we have a new test for pregnancy that promises to be of practical value. In one case of extra-uterine pregnancy the test gave a positive result. This method also furnishes us with a new means for the study of vomiting of pregnancy and of eclampsia. Indeed, it is altogether likely that Abderhalden's work on the ferments of the blood-plasma will prove of service for the study of a wide range of problems in pathology.

MORPHIN VERSUS THE COMBINED OPIUM ALKALOIDS

It is a logical endeavor on the part of those who are interested in the rational use of drugs to supplant crude concoctions of variable or uncertain activity by well-defined, isolated chemical compounds, the so-called active principles of the pharmacist's products. The increasing substitution of pure alkaloids and their salts for the older tinctures and extracts of pharmacologically active plants bears witness to the tendency of the times and gives promise of a more satisfactory and dependable therapeutic procedure. In certain cases, however, the results from the use of the isolated "principle" have been observed to be not entirely identical with those which attend the administration of corresponding galenical products or the crude drug itself. This is notably true of opium, the therapeutic efficacy of which is somewhat different from that of its chief alkaloidal ingredient morphin.

W. Straub has undertaken to throw some light on these differences. It is probable, *a priori*, that they would be due to the minor alkaloids of opium; but, to quote Straub: "It is improbable, *a priori*, that it is necessary, in order to improve the action of morphin, to drag in the whole of the two dozen alkaloids of opium (*dass zur Verbesserung der Morphin Wirkung alle zwei Dutzend Alkaloide mitgeschleppt werden müssen*); it is much more probable that only the most active or the most abundant of the alkaloids need to be considered."

It is well known that in addition to morphin, opium yields a series of alkaloids including narcotin, papaverin, codein, narcein and thebain, diminishing in abundance in the order indicated. Morphin makes up about 10 per cent. of the opium and narcotin 6 per cent., while the others are represented in relatively small amounts. In the proportions in which they are likely to be used in opium products, narcotin, papaverin and narcein may be regarded as practically inert. Even for the active codein relatively little effect is to be expected from the limited quantity which is present here. The conclusion from these facts is that we can scarcely explain the characteristic "opium effect," in contrast with the action of its contained morphin, on the basis of a simple summation of the dosage of its contributory alkaloids.

There are ways in which one substance may augment the action of another without merely adding its own specific potency to that of the second. A compound inert in itself may modify the sensitiveness of the organism to other substances; in other words, it may fortify their efficiency by rendering the individual peculiarly receptive or by other less apparent means. Herein seems to lie the superior efficiency of the combined opium alkaloids, according to recent observations by Straub.[1] Using narcotin, the most abundant companion of morphin, in doses too small to produce typical pharmacologic effects of themselves, he has found that it modifies and greatly increases the effects of morphin. This was demonstrated for a variety of manifestations peculiar to the action of this drug. In cats narcotin lessened the excitant effect of morphin; in rabbits it lessened the depression of the respiratory center; in mice it may almost double the toxicity of morphin. These researches have made it probable that the practical differences between opium and morphin are mainly due to the narcotin. H. Caesar,[2] working with Straub, has made comparable trials with the other alkaloids associated with morphin in opium and found that these do not produce an equal reinforcement of the features under discussion, at least when used in quantities suggested by their natural occurrence in opium.

They do have complex modifying effects, however, which are further complicated by any changes in their relative proportions. Since these proportions vary enormously in different samples of opium, and still more in its galenical preparations, and since the influence of these variations can neither be foreseen nor calculated, Straub and Caesar suggest the employment of a simple mixture of equal parts of morphin and narcotin in place of the opium. This proportion was found much more favorable than that existing naturally in opium (1 part of morphin against from 0.075 to 0.9 parts of narcotin, Brihl).

Straub's discovery of the peculiar pharmacologic interrelation of these two alkaloids marks a step in progress; but it still remains to be seen whether the morphin-narcotin mixture has any special advantage over morphin or opium in therapeutics.

1. Straub, W.: Pharmakodynamische Wirkung des Narkotins im Opium, Biochem. Ztschr., 1912, xli, 419.
2. Compare Caesar, H.: Toxizitätsänderungen des Morphins bei Kombination mit anderen Opiumalkaloiden, Biochem. Ztschr., 1912, xliii, 316.

DIPHTHERIA VACCINE AND DIPHTHERIA CARRIERS

An extremely vexing problem for health authorities and physicians is presented by bacillus-carriers, particularly carriers of typhoid fever and diphtheria. Typhoid carriers may harbor bacilli for years, during which time each is a menace to the community in which he lives. Diphtheria carriers may have bacilli in their throats for months, and are in a way even a greater menace than the typhoid carriers because of the greater ease with which the organisms may be distributed. In view of these facts, the work by Hewlett and Nankivell[1] is opportune; their results, if substantiated, may help to solve the problem of the diphtheria carrier.

By a series of observations the authors demonstrate that of the current methods of handling such carriers complete isolation has been most successful. Local and internal treatment give poor and unsatisfactory results. Thus, with a view to reaching the deeper tonsillar crypts not touched by local treatment, iodin was given until iodism resulted, but without success. As it had been found that with the disappearance of the diphtheria bacilli an increase in the non-virulent organisms in the throat occurred, inoculation of the throat with such organisms was attempted in two cases, but in vain. Finally, it was undertaken to prepare a vaccine, and this yielded the best results of all.

Bacillus diphtheriæ was grown in Roux bottles on serum or blood-agar; the growth was collected and washed several times in physiologic salt solution and centrifuged; the bacteria were then ground in intense cold by the Macfayden method and filtered through a Berkefeld filter. Sterile salt was added to the filtrate to make a solution containing either 2 mg. or 5 mg. per cubic centimeter of the ground bacteria.

In the earlier cases doses of from 0.5 mg. to 1 mg. were given. Later an initial dose of 2 mg. was given and after a week 5 mg., if the swabs showed bacilli still present in the throat. Usually only a slight reaction with redness around the site of injection resulted. In one case nausea, malaise, fever and a more general reaction were produced. One of the authors injected himself first with 2 mg. and then with 5 mg. and sustained only slight reaction. After the vaccine is kept for some time there is less local and general reaction, but the strength is lost to a large degree after three months. It is harmless to guinea-pigs, which after injection acquire considerable immunity to living diphtheria bacilli.

Of five diphtheria patients injected with this vaccine while a membrane was still present in the throat, four showed no bacilli after two weeks and one showed none after a month. This may have been merely a coincidence, but the children selected were of the weaker, physically less robust type that tend to become carriers. In thirteen chronic carriers injections of the vaccine were followed by disappearance of the bacteria in a comparatively short time. In six patients so treated the bacteria failed to disappear altogether, but there was a marked diminution in number. During the course of the investigation Hewlett and Nankivell found that scarlet fever patients who at the same time harbor the diphtheria bacillus are likely to become carriers, while those with diphtheria subsequently becoming infected with scarlet fever do not become carriers.

Practically simultaneously and for the same purpose, Petruschky[1] has used injections of bacteria killed with chloroform and washed. He was successful with seven chronic diphtheria carriers, and was able to establish an active immunity by the injection of 0.1 c.c. of a suspension of dead bacteria followed four or five days later by the same quantity of a suspension ten times stronger. He emphasizes that such injections may be given for protective purposes, including the immunization of chronic carriers and school children carrying diphtheria bacilli in their throats.

In view of the difficulties of long isolation and of the failure of other methods of treatment, this work is of great interest. We have, however, few cases on which to base a judgment. The treatment of diphtheria with antitoxin has yielded magnificent results; perhaps its prevention with vaccine may prove equally effective in limiting the spread of the disease through carriers, if not in protecting individuals directly.

1. Hewlett and Nankivell: Lancet, London, 1912, clxxxiii, 143.

RECENT JAPANESE INVESTIGATIONS ON RICE BRAN IN RELATION TO DISEASE

We have frequently taken occasion to refer to the experimental production of multiple neuritis in animals by the use of exclusive diets of polished rice, and to the relationship of this outcome to the etiology of beriberi in man.[2] Reference has also been made to the attempts to isolate from the millings of rice a chemical compound which will avert the onset of the symptoms or act as a curative agent when the disease has already manifested itself.[3] The subject is of such serious importance and the prospect of experimental success so promising in view of the preliminary results already achieved that this field of study has quite naturally attracted investigators to it speedily. In the Far East, in particular, at the very home of the difficulties in their application to human nutrition, the problems have been attacked vigorously and effectively by scientists of various nationalities. The latest report, from the Agricultural College of the Imperial University at Tokyo[4] brings new confirmation of the probability that some definite chemical compound can be isolated which will exhibit the curative and prophylactic properties that are the sub-

1. Petruschky: Deutsch. med. Wchnschr., 1912, xxxviii, 1319.
2. The Etiology of Beriberi, THE JOURNAL A. M. A., Oct. 7, 1911, p. 1213; The Probable Cause of Beriberi, THE JOURNAL A. M. A. June 15, p. 1859; The Effects of Exclusive Feeding—Experimental Scurvy, THE JOURNAL A. M. A., July 20, p. 198.
3. The Relation of Rice to Certain Diseases, THE JOURNAL A. M. A., Feb. 24, 1912, p. 557.
4. Suzuki, V., Shimamura, T., and Odake, S.: Ueber Oryzanin, ein Bestandtheil der Reiskleie und seine physiologische Bedeutung, Biochem. Ztschr., 1912, xliii, 89.

ject of such lively physiologic speculation. The active agent is present in alcoholic extracts of rice polishings. By special methods of precipitation and concentration the Japanese investigators have partly succeeded in isolating a substance which promises to furnish a product of specific potency, the exact chemical structure of which can be ascertained in due season. The name "oryzanin," which suggests the relationship of the substance to rice, has been proposed for the new product already separated in what the chemist would call a crude form. Among its decomposition products destined to give some insight into its structural make-up, pyridin, carbon dioxid, cholin and dextrose have been detected. Of course such incomplete data are too scanty to give any very definite conception of the chemical character of oryzanin; but they encourage the belief that the prospect of a solution in the near future is no longer purely visionary.

Like the product separated by Funk at the Lister Institute in London, the crude oryzanin will resuscitate pigeons which have been fed on polished rice until they show symptoms of peripheral neuritis. The potency of the product already available (which will presumably be increased by a more successful purification) is best indicated by the fact that quantities of from 5 to 10 mg. per day suffice to prevent the onset of the typical malnutrition which polished rice invariably induces in pigeons. The proportions here mentioned constitute only 1/2,500 to 1/5,000 of the daily food intake of the animals.

These curative effects are not confined to pigeons alone. Other species are affected by a prolonged inadequate rice diet and can be protected from dangerous symptoms by the addition of oryzanin or alcoholic extracts of rice bran to their food. Arguing that the small content of inorganic constituents can play no significant part in the restoration of nutritive equilibrium thus established, the Japanese investigators go so far as to assert that oryzanin includes a compound indispensable for the maintenance of life. They have fortified themselves in this belief by feeding small animals with mixtures of isolated food-substances—proteins, fats, carbohydrates and inorganic salts—without nutritive success until the rice product was added in small amounts to the dietary. The recent experiments of Osborne and Mendel[4] in this country show, by the success with which rats were maintained on mixtures of isolated foodstuffs over long periods of time, how cautious one must be about drawing sweeping conclusions regarding the deficiences in dietaries. It may well be that the chemical compound still masked in the crude product called oryzanin is one of a type widely distributed in nature; for it has been found that various plant materials—barley, wheat, oats, beans, etc.—will avert the dangers of milled rice. The usefulness of animal products is still somewhat more doubtful, although alcoholic extracts of meat and of milk have already furnished some suggestive positive experimental results.

On the basis of our present knowledge it would show a lack of critical insight to maintain that there is only a single type of malnutrition and a single prophylactic agent. Without accepting the extreme deductions of Suzuki, Shimamura and Odake regarding the exceptional life-saving virtues of the product they have investigated, we can nevertheless welcome the advent of a period when the investigation of these unique nutritive properties is being put on a more substantial experimental basis. For, after all, the problems involved are chemical ones; and not until they are treated with the cooperation of the biologic chemist can they be expected to attain a successful solution.

4. Osborne, T. B., and Mendel, L. B.: Feeding Experiments with Isolated Food Substances, Publication 156, Carnegie Institution of Washington, 1911.

Current Comment

TYPHOID AND THE CARELESS MILKMAN

An epidemic of twenty-eight cases of typhoid fever, with fifteen additional suspects, on the route of one small dairyman near Philadephia directs attention to several interesting points. Typhoid fever is propagated from one case to another, and milk is its most perfect medium. A careless dairyman, careless consumers and a case of typhoid fever along the route make a combination that spells an inevitable epidemic of that dread disease. The dairyman in question did not possess enough clean bottles to supply milk to all his customers each day, so as he passed along his route he gathered up bottles which were set out for him, which of course had collected dirt, flies, bacteria and miscellaneous filth, and filled them from his bulk supply as he passed along. His first bottle customer had typhoid fever and used as a source of water-supply a spring, the overflow from which was the source of water for the family of the next customer, who also bought loose milk from the dairyman. Typhoid soon developed in the latter family and in a short time there were twenty-eight cases of the disease in the forty families served by the dairyman, with a possible additional fifteen who were suspected of having it. The rapid spread of the disease in this circumscribed area resulted in an investigation by the state health board, and in a few hours the epidemic was traced to this dairyman and his method of distributing the milk, which was known to his customers. The dairyman, a member of his family and his hired man were included among the victims. The loss in time, money and suffering from this epidemic is obvious and need not be dwelt on here. This typical instance, however, serves to call attention to the individual, community and national carelessness which makes such a thing possible. It also illustrates the ease with which a well-informed health organization can trace out the source of such an epidemic and apply the measures necessary to stop it, or which would have prevented it if applied in the first instance. Although, through another instance of carelessness or indifference, only about 60 per cent. of the area of the United States has adequate vital statistics laws, the figures are suffi-

ciently well worked out to show that we possess the unenviable distinction of having a death-rate from this filth-fostered disease which is among the highest. As tabulated in a recent article,[1] compared with other countries, the United States stood as follows with reference to deaths per million from typhoid fever during the period from 1905 to 1908; Spain, 362; United States (in the registration area), 288; Italy, 283; Austria, 156; Servia, 147; Belgium, 122; Ireland, ninety-one; England and Wales, eighty; Scotland, seventy-four; Netherlands, seventy-two; Prussia, sixty-one; German Empire, fifty-three; Switzerland, forty-six. It behooves us speedily to readjust conditions so that our death-rate may make a more creditable showing, and epidemics similar to the small one referred to may be prevented.

MALARIA AND THE DEVELOPMENT OF THE SOUTH

The portion of our country east of the Mississippi and south of the Ohio — the South — is one of the most important and rapidly developing areas of the United States. Its development is taking place in spite of the handicap of preventable diseases; but these are yielding to the scientific spirit of Southern physicians and the energy and enterprise of Southern citizens. Hookworm is rapidly being eliminated and the intensive study of pellagra is bound to overcome that serious but less wide-spread disease. Recent agitation and action concerning these two diseases have placed them in the lime-light almost to the exclusion of the older and better-known disease, malaria, which is still a tremendous menace and handicap to industrial progress. Its importance, however, as a source of enormous economic and health waste has not been lost sight of, and at the last meeting of the Southern Medical Association a commission was appointed to study the question of the prevention of malaria in the South and to create and set in motion machinery for its complete eradication. This commission has as its head Capt. Charles F. Craig of the Army Medical School, and among the experts on tropical diseases in its membership is Dr. C. C. Bass, the discoverer of the method of cultivating the malarial plasmodium. As an evidence of the vast importance of malaria as a source of mortality and morbidity, involving tremendous economic waste, Dr. Graham E. Henson of the commission, taking the records of Birmingham, Mobile and Montgomery, the three largest cities of Alabama, and studying the death-rate from malaria in those cities, has estimated that in Alabama last year there were over 70,000 cases of malaria with over 770 deaths, and that the economic loss would total over $2,000,000. Considering the decrease in the earning-power of all those afflicted with the disease and its consequences, it is probable that this estimate is far too low; and when all the states having malaria are considered, the great importance of this question is at once apparent. It becomes not only a question of local health administration but one of the most important conservation problems with which any section of this country has to deal, and deserves the consideration of Congress and the support of the national government more than do some other problems of conservation. While the material resources of the country ought to be conserved, they are secondary in importance to the human resources which make them valuable. The work of this commission, which originated wholly within the medical profession, will be of inestimable benefit to the South, and it should be encouraged and supported by the local and national governments until malaria in the South has been as completely exterminated as yellow fever. This is possible, but it is a much greater and more expensive task than the eradication of the latter disease, and the burden of it should be borne by the whole people.

1. In the Military Surgeon, Aug. 31, 1912.

THE BEGINNING OF THE END

F. L. Dunlap — better known to the public as "Me-Too Dunlap" — has resigned from his position in the Bureau of Chemistry to take a commercial position at a higher salary than the government paid him. Dunlap, it will be remembered, was the plastic gentleman who took advantage of his chief's absence from Washington to prefer charges against him in the sensational attempt of the "interests" to oust Dr. Wiley from the Department of Agriculture. How trivial and unfounded the charges were is now history. The American public is to be congratulated on Dunlap's resignation. We trust that it marks the beginning of the end of a régime that has made effective work in the Bureau of Chemistry impossible. When McCabe, the self-confessed tamperer with official documents, and Wilson, the well-meaning but superannuated department head, also feel the spirit of resignation moving within them, a nation-wide sigh of relief will go up from those who have suffered from the comparatively unfettered machinations of the food-dopers, "patent-medicine" fakers and drug adulterators.

ANAPHYLAXIS AND HEART-BLOCK

Despite the obscurity and uncertainty which still attend the interpretation of many of the striking features of the phenomena spoken of under the term anaphylaxis, the study of these responses has already been full of fruitful suggestions in various domains of pathology. It has furnished a working basis for the investigation of hitherto obscure manifestations of diseases like asthma and hay-fever, and has given clues to potent possibilities in the direction of treatment or prophylaxis. Among the newest indications of the rôle which this unique hypersensitiveness and the consequent anaphylactic reactions may play is their suggested relation to certain types of heart-block or disturbances in the coordination of the heart-beat. Dr. John Auer,[1] of the Rockefeller Institute in New York City, has described peculiar anatomic changes in localized portions of the heart musculature in rabbits which have succumbed to an anaphylactic seizure after being sensitized with horse-serum. Since these transformations involved some of those portions of the heart which are known to be concerned with its conduction processes, it seemed possible that under these conditions the organ might show an upset in the coordination of the beat.

1. Auer, John: Anaphylaxie als eine Ursache von Koordinationsstörungen des Herzschlags beim Kaninchen, Zentralbl. f. Physiol., 1912, xxvi, 363.

This is precisely what Auer found. Disturbances in the cardiac rhythm attended not only the fatal cases of anaphylaxis, but also some of those in which recovery supervened. The behavior of the heart in these instances was comparable with what is observed in cases in which there are marked inequalities in the number of auricular and ventricular beats, so that 3:1 or 2:1 rhythms, for example, become established. Added interest centers in the fact that similar muscular alterations are observed in the heart after administration of lethal doses of digitalis, strophanthus and other poisons. The relation of these substances to disturbed heart-rhythm is known; and it is not at all unlikely that the heart-block which they have been observed to occasion may be attributable, as in the case of anaphylaxis, to morphologic changes which the drugs induce in the cardiac tissue. At any rate there is food for reflection in the analogies presented.

HIGHER PRELIMINARY REQUIREMENTS

Immediately following the creation of the Council on Medical Education in 1904 as a permanent committee of the American Medical Association, that Council began an active campaign for higher standards of admission to medical colleges. The standard advocated was a reading knowledge of a modern language aside from English, preferably German or French, and at least a year's work devoted to thorough courses in physics, chemistry and biology, this to be required in addition to a standard four-year high-school education. In 1904 only four medical colleges in the United States were requiring anything in advance of the high-school education, but since that time the number has increased until now forty-five medical schools[1] are requiring these higher standards. Thirty of these schools are requiring two or more years of work in a college of liberal arts as a minimum, while fifteen are requiring but one year. Efforts were also made by the Council to encourage higher requirements of preliminary education by state licensing boards and as a result, ten states have now adopted the higher requirements. North Dakota, Iowa, Minnesota, Colorado and Indiana have adopted a requirement of two years of college work as the minimum, while South Dakota, Connecticut, Kansas, Utah and New York have adopted one year. Last June the House of Delegates adopted a report instructing the Council on Medical Education to omit from Class A, after Jan. 1, 1914, any medical college which did not require for admission of every student "at least one year of college credits in chemistry, biology, physics and a modern language, or two or more years in a college of liberal arts in addition to the accredited four-year high-school course." Last week word was received[2] that the New York Board of Regents had voted to require after Jan. 1, 1913, as a minimum for entrance to medical schools in that state, in addition to a four-year high-school education a year's work in physics, biology and inorganic chemistry respectively. The campaign still goes on, but already the general adoption of at least one year's work in physics, chemistry and biology as the minimum standard of admission to medical schools in this country is assured within the next few years. With the adoption of this standard by the medical schools of the United States, preliminary requirements in this country will be on a par with those of other leading nations.

1. Listed in THE JOURNAL A. M. A., August 24, p. 636.
2. THE JOURNAL A. M. A., September 7, p. 811.

Medical News

COLORADO

Personal.—Dr. John F. Morgan, city physician of Fort Collins, has resigned and will remove to Carthage, Mo.——Dr. J. F. Dawson, Platteville, engaged in a pistol duel with four men who had robbed the Platteville postoffice, August 19.

Hospital Addition Completed.—The addition to St. Joseph's Hospital, Denver, which has been erected at a cost of $100,000, is completed, and will be opened for patients as soon as the rooms are furnished. Twelve of the forty-four rooms have already been equipped.

Commission Disapproved Voucher.—The Civil Service Commission has declined to approve the pay voucher for Dr. A. P. Busey, superintendent of the State Insane Hospital, Pueblo, and of the State Home of Mental Defectives, Denver, because of an alleged technical irregularity in his dual appointment.

ILLINOIS

New Officers.—Aux Plaines Medical Society: president, Dr. F. L. Glenn; secretary, Dr. W. W. Dicker, both of Austin, Chicago. On August 28, the society held a joint meeting with the Fox River Medical Society at Mill Creek Park near Batavia.

Personal—Dr. Clarence E. Pierce, O'Fallon, who has been critically ill with tetanus, is reported to be improving.——Dr. O. J. Roskoten, Peoria, has been elected vice president of the National German-American Alliance.——Dr. Jay H. Bacon, Peoria, has gone abroad.

Chicago

Noted Toxicologist Ill.—Dr. Walter S. Haines, professor of chemistry and materia medica in Rush Medical College, is reported to be critically ill in a sanatorium near Los Angeles.

To and From Europe.—Dr. and Mrs. Rudolph W. Holmes have sailed for Europe.——Dr. and Mrs. John McKinlock have returned from Europe.——Dr. D'Orsay Hecht has returned after a six months' study trip abroad.

INDIANA

Institution Superintendent Dies.—Albert E. Carroll, for many years superintendent of the School for Feeble-Minded Youth, Fort Wayne, who had been connected with the institution from his early youth in various capacities, and who was well known throughout the United States, died August 27, from pneumonia.

Personal.—Dr. W. F. Clevenger, Indianapolis, has returned from Europe.——Dr. Herbert M. Woollen, Indianapolis, has been elected president of the American Central Life Insurance Company.——Dr. W. J. Molloy has succeeded Dr. H. S. Bowles as secretary of the Muncie Board of Health.——Dr. William Shimer has succeeded Dr. J. P. Simonds as superintendent of the pathologic laboratories of the State Board of Health.——Dr. K. W. Kidy has succeeded Dr. Asa E. Fletcher in the laboratories as physician in charge of the demonstration of the Pasteur treatment and Dr. L. W. Barry has been appointed assistant pathologist at the laboratories.

KENTUCKY

Hospital Contract Awarded.—The trustees of the W. W. Massie Memorial Hospital, Paris, have awarded the contract for the reconstruction of the G. G. White property, which has been purchased for hospital purposes, to a Danville construction company. Work on the building is to be completed in four months.

Personal.—Dr. Frank E. Corrigan, Louisville, is reported to be critically ill as the result of a street-car accident last month.——Dr. Charles A. Nevitt announces that he will open a private sanitarium in Lexington about October 1.——Dr. H. P. Sights has been reelected superintendent of the Western State Hospital, Hopkinsville.

State Tuberculosis Commission Organized.—The State Tuberculosis Commission met in Frankfort, August 21, for organization. Gov. McCreary was elected president and Mrs. Desha Breckinridge, Lexington, vice president. The work of the commission will be done through five committees, executive, financial, publication, legislative and extension. Dr. R. T. Yoe and J. Bernhard Flexner were appointed a committee to select a secretary for the commission. Dr. Ernest Morris, of Henry County, was chosen temporary secretary.

MARYLAND

Baltimore

Personal.—Drs. E. Goetsch and J. Jacobsen sailed for Europe, September 3.——Drs. John M. T. Finney, Herman Brulle and William B. Wolf have returned from Europe.——Dr. Howard A. Kelly returned from his camp in Canada, September 2.——Dr. William Tarun has been obliged to give up practice and go to the Adirondacks on account of disease of the lungs.

MASSACHUSETTS

Floating Hospital Needs Funds.—The managers of the Boston Floating Hospital announce that $11,000 more is needed for the expenses for the balance of the season.

Hospital Soon Ready.—The buildings of the new Peter Bent Brigham Hospital, an addition to the group of the buildings comprising the Harvard Medical School, are rapidly approaching completion and it is expected that they will be ready for occupancy about October 15.

Personal.—Dr. and Mrs. Samuel H. Durgin, Boston, have returned from Europe.——Dr. Arthur A. Howard, Boston, has accepted a position on Drake University Medical Faculty, Des Moines, Ia., in the pediatric department.——Dr. W. G. Kimball, Huntington, has been appointed medical examiner for Huntington district of Hampshire County.——Dr. Harry M. Cutts, Brookline, has been appointed medical examiner of Norfolk County.——Dr. John F. Croston, Haverhill, has been appointed medical examiner of Essex County.——A reception was tendered Dr. Paul A. Jackmauh, the first graduate of the South Boston High School to be appointed to the staff of Carney Hospital, at the residence of Dr. William P. Hurley, South Boston, August 8.——Dr. John W. Coughlin, Fall River, has been appointed a member of the board of arbitration in the dispute between the Springfield and Worcester street car systems and their employees.

MICHIGAN

Sanatorium for Criminals.—The state pardon board will ask the legislature for an appropriation for a state tuberculosis hospital for criminals to be located at the State Reformatory, Ionia.

New Officers.—Upper Peninsula Medical Society at Menominee, August 9: president, Dr. Edward Sawbridge, Stephenson; secretary, Dr. H. J. Hornbogen, Marquette. Marquette was selected as the next meeting place.

Charitable Societies Combine.—The officers of the Calumet Associated Charities and the Calumet Branch of the Houghton Anti-Tuberculosis Society have been combined and are now located in the Orenstein Block, Red Jacket.

MINNESOTA

Cost of Care of Insane.—During the fiscal year just closed the state paid $1,119,275 for the care of insane patients in the state hospitals at St. Peter, Rochester, Fergus Falls, Anoka and Hastings.

Tuberculosis Hospital for Lake County.—The commissioners of Lake County have advertised for bids for the construction of a sanatorium for tuberculosis to be located on the county farm, which is about five miles from Two Harbors. The building is expected to cost about $3.000.

Leper Camp Not Wanted.—Dr. Henry M. Bracken, secretary of the State Board of Health, proposed the establishment of a colony for lepers on the campus of the University of Minnesota for educational purposes, stating his belief that there would be less danger from a colony of lepers than from a colony of consumptives. The regents of the University, on September 10, rejected the proposition, stating that it deemed the leper colony inadvisable.

To Check Trachoma.—Dr. Henry M. Bracken, secretary of the State Board of Health, has recommended that physicians of the White Earth Reservation be commissioned as special sanitary inspectors to report to the board all cases of trachoma and other reportable diseases among whites and mixed bloods not wards of the government. He also recommended that a field officer be appointed to investigate trachoma, especially among children in the schools of the reservation, in the iron range towns and other territory.

Personal.—Dr. Robert M. Phelps, assistant superintendent of the Rochester State Hospital, has been appointed superintendent of the St. Peter State Hospital, vice Dr. H. A. Tomlinson, who is to take charge of the Inebriate Farm at Willmar about October 1.——Dr. Carlton Graves has been appointed a member of the library board of Aitkin.——Drs. Charles R. Ball and Auten Pine, St. Paul, and Dr. Franklin R. Wright, Minneapolis, have been appointed members of the consulting staff of the Minnesota Soldiers' Home.——Dr. J. Francis Schefeik, Minneapolis, has returned from Europe.

MISSOURI

Personal.—A banquet was given by local physicians, who are heads of departments and interns in the Kansas City General Hospital, in honor of Dr. L. W. Luscher, retiring head of the hospital, and Dr. R. E. Castelaw, his successor. Dr. Luscher will spend a year in South America and then expects to return to practice in Kansas City.——Drs. L. C. Cook, Webb City, E. E. Holtzen, Sedalia, and Orville J. Sloan, Neosha, have been appointed first lieutenants M. C., N. G. Mo.

St. Louis

Personal.—Rev. Charles Keller, M.D., after the completion of a graduate course at Harvard Medical School, will sail for Honolulu, November 1, to take up work among the lepers at Molokai, T. H.——The office of Dr. Edward Henschel was burglarized recently and instruments valued at $250 were stolen.

Infirmary Opened.—The St. Louis Eye, Ear, Nose and Throat Infirmary was opened at 2329 Locust Street, August 1. Dr. Selden Spencer is president of the staff; Dr. William H. Lueddle, secretary, and Dr. F. C. Simon, treasurer. The active staff also includes Dr. H. C. Creveling, John Green, Jr., E. T. Senseney, J. F. Shoemaker and F. E. Woodruff.

Ground for Tuberculosis Camp Broken.—On September 1, ground was broken for the Night and Day Tuberculosis Preventorium at Hahn's Grove. The estimated cost of the building will be about $3,000. It is situated on a bluff overlooking the Mississippi River, in the heart of a heavily wooded tract about half a mile from the Broadway street-car line.

NEBRASKA

New Medical Building.—It is reported that splendid progress is being made in the construction of the new building for the University of Nebraska College of Medicine, Omaha. The building is to be two stories in height and about one hundred feet square.

Personal.—Dr. A. G. Emerson, Scotts Bluff, has been declared of unsound mind and committed to the State Hospital, Lincoln.——Dr. George P. Shidler, York, has been appointed a member of the insanity commission, vice Dr. George W. Shidler, deceased.——Dr. J. J. Hompes, Lincoln, has gone abroad.

NEW YORK

Personal.—Dr. G. T. Boycheff, Solvay, has returned from Europe.——Dr. Louis Hartman, Syracure, who, while on a hunting trip in the north woods in July accidentally shot himself and had his left foot amputated at the Royal Victoria Hospital, Montreal, has returned to his home, convalescent.——Dr. John Tierney has been appointed assistant surgeon of the State Soldiers' Hospital, Bath, vice Dr. Alexander L. Smith.——Drs. James W. Putnam and J. W. Fitz-Gerald, Buffalo, are spending the summer in Europe.

Deaconess Hospital to be Dedicated.—The opening of the German Deaconess Hospital, Buffalo, will occupy the week of October 1. The first night will be donors' night; on the second night the members of the different societies connected with the hospital will be present; on the third night members of the different churches of the city will be invited to attend and the fourth will be known as "professional night" when the medical staff of the hospital will be in charge of the entertainment. The fifth night will be spent in preparation for the dedicatory ceremonies which will be held on October 6.

Poliomyelitis in Buffalo.—The presence of poliomyelitis in Buffalo has excited considerable alarm. During July sixty-two cases were reported with an increase the first part of August. A circular letter has been issued to the physicians of Buffalo by the health department, which gives a thorough and exhaustive study of the cause of the outbreak. Two wards have been set apart at the Ernest Wende Hospital for the isolation of infantile paralysis, and electric apparatus for diagnosis and treatment has been installed and two physi-

cians of the staff have been appointed by the health commissioner to supervise the city cases. The department is interested in the report of cases before they reach the paralytic stage and suggests that physicians who are called to see an obscure case, exhibiting symptoms of infantile paralysis, report the case promptly to the department, when one of the attending men will be detailed to look after and study the case. Early observations are of special value. Houses in which there is a case of infantile paralysis will be placarded, but absolute quarantine will not be insisted on unless indicated. The health department will work in conjunction with Dr. Wade H. Frost, U. S. P. H. Service, and will inspect every case reported and tabulate in detail all the statistical features. It will make, in addition to this, a clinical study of each patient especially as to resultant paralysis or impaired muscular power. The department bespeaks the cordial cooperation of every physician in the city in this effort to gain information regarding the cause, treatment and cure of the disease. All cases will be treated as strictly confidential, and all assistance rendered will be free of charge. The department furthermore agrees to assume complete control, free of charge, of any case on request of the attending physician.

New York City

Personal.—Among those returning from Europe recently are Dr. and Mrs. C. Cleveland, Dr. and Mrs. Alfred Hess, and Drs. C. F. Adams, W. H. Davis, P. H. Williams and O. J. Chase. ——Dr. and Mrs. J. J. Rainey, Troy, have sailed for Europe.

On Lookout for Cholera.—Health officers at the port of New York have had orders to be on the watch for cholera on vessels arriving from southern Italy and Sardinia, following the receipt of a cablegram stating that there had been an outbreak of cholera in Sardinia.

Extension Course in Nervous Diseases.—A course of two weeks devoted to an extension course in nervous and mental diseases is being given at Fordham University School of Medicine. Several noted specialists from abroad are participating, among whom are Drs. Henry Head and Gordon Holmes of London; Dr. Carl Jung of Zurich; Dr. Alwyn Knauer of Munich; Dr. N. Achucarro of Madrid, and Dr. Colon K. Russel of Montreal.

Graduate Courses.—Brof. Dr. H. Straus, Berlin, will deliver a course of lectures October 12-14-15 on diseases of the stomach and kidneys and Prof. Dr. Carl von Noorden, physician in chief of the City Hospital, Frankfort, Germany, a course on pathology and treatment of diabetes, radium therapy and arteriosclerosis, October 28-31 inclusive. These two courses will be delivered at the New York Post-Graduate Medical School.

Health Department Replies to Milk Commission.—The milk commission has sent several complaints regarding the milk-supply to the health department and has criticized the department for what seemed to be gross negligence. In the reply made by Commissioner Lederle it is stated that the health authorities have been doing their best to guard the milk-supply and called attention to the grading of the milk, and to the probability that the inferior milk found in restaurants, hotels and lunch rooms was of that Grade C which is permitted to be sold for cooking purposes. The reply states that while it would be desirable to have only bottled milk sold it is impossible at present to secure a sufficient supply of the better grades. The department also points out that thirty-one prosecutions against milk dealers have been sent to the corporation counsel since July 15.

OHIO

Cincinnati Personals.—Dr. George A. Fackler has been appointed president pro tem. of the Board of Health and Dr. Edward W. Walker, vice-president.——The houses of Drs. Harry Tounley and Samuel W. Craig were burglarized, recently.

Hospital News.—The trustees of Miami Valley Hospital, Dayton, have formally accepted a gift of $25,000 to be used exclusively for the treatment of specific diseases.——An anonymous gift of $10,000 has been received by the Hospital for Babies, Cleveland.

Campaign for Babies' Hospital.—The two weeks campaign at Cleveland for the babies' hospital fund brought the contributions to $340,000. The plan of the committee is to raise one million dollars which is to be used for the building, equipment and maintenance of a hospital for children.

Personal.—Dr. E. A. Peterson has succeeded Dr. Harris G. Sherman as chief of the medical inspection bureau of the public schools of Cleveland.——Dr. L. W. Weaver, Columbus, has been appointed assistant medical examiner for the Pennsylvania Volunteer Relief Department with headquarters at Fort Wayne, Ind.

OREGON

Personal.—Dr. E. A. Sommer, Portland, who has been seriously ill with an infected wound due to a needle puncture during an operation, is reported to be improving.——Dr. Wilson McNary, Portland, has been appointed superintendent of the Eastern Oregon Branch Insane Hospital, Pendleton, vice Dr. M. K. Hall, La Grande, resigned.——Dr. G. M. Wells, Portland, has returned from a trip around the world.

Physicians Denounce Quacks and Advertising.—At the regular meeting of the Portland Ad Club Luncheon, August 21, the program was in the hands of physicians, Dr. John F. Beaumont, presiding. Dr. J. Chris O'Day spoke on "Medical Advertising, Genuine and Spurious" and bitterly denounced quacks who advertised as "specialists in the treatment of men" and sharply criticised newspapers and periodicals which accept advertisements from this class. Dr. Walter T. Williamson urged the support of the masses of the people to the new medical bills pending.

PENNSYLVANIA

State Society Meeting.—The Pennsylvania State Medical Society will hold its annual meeting at Scranton, September 23-26; among the entertainments will be a concert at the exhibition hall, September 24, and the president's reception at Hotel Casey, September 25.

Sanatorium for Pittsburgh.—Ground will be broken this month for the Pittsburgh Municipal Sanatorium at Warners Station. The sanatorium is situated on a site above the Allegheny River about eight miles from the city. As present planned, the institution will consist of six buildings, covering about four of the thirteen acres of the site and will accommodate nearly two hundred patients, besides the administration force. The buildings to be erected consist of an administration building, two open pavilions for advanced cases, a service building and two large open-air cottages for patients in the early stages of the disease.

Personal.—Dr. Thomas Wray Grayson, Pittsburgh, has gone to Berlin for study.——Dr. Patrick F. Boyle, South Bethlehem, was operated on in the Jefferson Hospital, Philadelphia, for appendicitis, September 3.——Dr. E. J. Butler, Wilkes-Barre, who was thrown from his carriage and seriously injured, has resumed practice.——Dr. John W. Bealor, Shamokin, is recovering from an operation for gall-stones.——Dr. Henry R. Douglas has been appointed milk, dairy and meat inspector for the city of Harrisburg.——Dr. Thomas S. Blair, Harrisburg, has been appointed editor of the *Medical Council*, to succeed the late Dr. John Jay Taylor.——Dr. Dixon, on August 29, appointed Dr. W. D. Kline, Allentown, physician-in-charge of Tuberculosis Dispensary No. 51, to succeed the late Dr. Morris F. Cawley; Dr. Boyd B. Snodgrass, Rochester, physician-in-charge of Tuberculosis Dispensary No. 22, to succeed Dr. E. S. H. McCauley, Beaver, resigned, and Dr. F. W. Black, Robertsdale, Huntingdon County, as physician-in-charge of a new tuberculosis dispensary to be opened at Robertsdale.

Philadelphia

Personal.—Drs. Leon Felderman, C. P. O'Boyle and J. M. Rosenthal have resigned from the staff of the Municipal Hospital.

Hospital Dedicated.—The Frankfort branch of the Salvation Army dedicated the new Electro-Therapeutic Hospital and Dispensary with appropriate ceremonies, September 1.

WASHINGTON

Personal.—The office of Dr. W. W. Schwabland, White Bluffs, was destroyed by fire, August 11.——Dr. Charles B. Boudwin, Seattle, is reported to be seriously ill in the Seattle General Hospital following a tonsillectomy.——Dr. E. M. Anderson and wife, Spokane, have sailed for Europe.——Dr. Arthur P. Calhoun, Fort Steilacoom, was seriously injured in an automobile collision recently.

Advisory Staff.—Dr. B. H. Roark, Spokane, county physician of Spokane County, has presented the following list as a volunteer consulting staff to care for county patients: medicine, Drs. N. M. Baker, P. D. McCormack, W. J. Howells and H. E. Wheeler; surgery, Dr. H. B. Luhn, J. G. Cunningham, James M. Neff and Arthur T. R. Cunningham; eye, ear, nose and throat, Drs. R. A. Greene, S. B. Hopkins, E. M. Anderson and W. S. Frost; orthopedic surgery, Dr. C. L. Eikenbary, and pathology and bacteriology, Dr. M. M. Patton.

WISCONSIN

Hospital for Oshkosh.—Plans have been drawn for a new building for the Lakeside Sanatorium, Oshkosh, to be erected at a cost of $50,000. The institution will be used as a general hospital and sanatorium.

Flower Day Announced.—The faculty and alumni of the Wisconsin College of Physicians and Surgeons announce that they will give a flower day for the benefit of their free dispensary at Fourth Street and Reservoir Avenue, Milwaukee, on September 21.

Personal.—Dr. and Mrs. A. G. Hovde, Superior, have returned after a year in Europe.——Dr. George T. Hegner, resident physician at the Emergency Hospital, Milwaukee, has resigned and will enter practice in Appleton, October 1.——Dr. and Mrs. William H. Bartran, Green Bay, have returned from Europe.——Dr. O. P. Schnetzky, Milwaukee, was thrown from his car recently and seriously injured.——Dr. Gustav Schmitt has been elected president of the Count von Steuben Monument Association.

GENERAL

A Clinical Week.—For the week preceding the meeting of the Mississippi Valley Medical Association in Chicago, October 22-24, and for the two days following the meeting, a schedule of clinics is being arranged, to include medicine, surgery, special branches and research work in laboratories.

International Gynecologic Congress.—A cable dispatch states that the sixth International Congress of Gynecology opened at Berlin, with a good attendance, September 9. The invitation of the United States to hold the next congress in this country was officially accepted, and Dr. J. Riddle Goffe of New York was chosen president-elect.

Austrian Otologist in America.—Dr. Erich Ruttin, assistant in the Royal University Ear Clinic, Vienna, is making a tour of the United States. He arrived in New York August 5, then went to Boston, and then to Niagara Falls to read a paper before the American Academy of Ophthalmology and Oto-Laryngology, and from there went to the Pacific coast.

Electro-Therapeutic Election.—At the annual meeting of the American Electro-Therapeutic Association in Richmond, Va., last week, the following officers were elected: president, Dr. F. Howard Humphris, London, England; vice-presidents, Drs. George E. Pfahler, Philadelphia, and E. C. Titus, New York City, and secretary, Dr. J. W. Travell, New York City.

Meeting of Colored Physicians.—The Negro National Medical Association held its fourteenth annual meeting in Tuskegee, Ala., August 20-21 and selected Nashville as its next place of meeting. The following officers were elected: president, Dr. J. A. Kenney, Tuskegee, Ala.; vice-presidents, Drs. D. A. Ferguson, Richmond, Va., and C. M. Wilkerson, Mobile, Ala.; secretary, Dr. Walter G. Alexander, Orange, N. J., and assistant secretary, Dr. E. P. Roberts, New York City.

Measures to Restrict Tuberculosis in India.—One of the prominent Parsees of Bombay has recently guaranteed an annual fund of $5,000 for fifteen years to aid in the suppression of tuberculosis. At present there is no municipal tuberculosis hospital there, but public interest is being aroused and an active antituberculosis movement seems to have been inaugurated. The introduction of medical inspection of schools is also being considered.

The Study of Pellagra.—The National Association for the Study of Pellagra will hold its second triennial meeting in Columbia, S. C., October 3-4, with headquarters at the State Hospital for the Insane. The morning session will be devoted to addresses of welcome, the address of the president and business. During the afternoon session, the etiology, epidemiology and statistics of pellagra will be discussed, together with local history and diagnosis. In the evening an address will be delivered by Surgeon General Rupert Blue, U. S. P. H. Service. The work of the second day will consist of papers on laboratory investigations of pellagra and clinical features and miscellaneous aspects of the disease and in the evening there will be an exhibition of lantern slides illustrative of pellagra.

Unauthorized Insurance Agent Still Operating.—A warning was published in THE JOURNAL August 24, p. 661, quoting complaints from physicians that they had been victimized by a Sumner P. Hinckley, who represented himself as an agent of the Conservative Life Insurance Company of Wheeling, W. Va. It was the old story of physicians paying good money to a stranger. A letter from the company states that it has no license to issue insurance policies in Illinois, that Hinckley is not its agent, and that he is collecting money under false pretenses. Since the previous notice was published, this man has been reported as operating in the following Illinois cities: Peoria, Chicago, Decatur, Danville, Rock Island and Rockford, and also in Toledo, Ohio. Warrants are out for his arrest, and it will be a service to those who have been victimized, as well as a protection to the profession in general, if anyone who learns his whereabouts will report him to the local police and show them this notice. The police will telegraph Sheriff F. G. Minor of Peoria, Ill., who holds a warrant for Hinckley. The telegraphic reply from Sheriff Minor will be an authorization to the local officials to arrest and hold the man as a fugitive from justice.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Aug. 31, 1912.

The Case of Plague in Liverpool

The case of plague in a boy admitted to a hospital in Liverpool with a diagnosis of appendicitis has been reported in a previous letter to THE JOURNAL. The boy has been treated with serum and is making a good recovery. Every precaution has been taken to prevent the spread of the disease; the boy's family has been isolated and all other persons connected kept under close supervision. An examination of the rats in the neighborhood is being systematically made.

The Declining Birth-Rate

The registrar-general's summary for 1911 which has just been issued again shows a fall in the birth-rate in England and Wales. The marriages registered last year numbered 274,577, corresponding to a rate of 15.2 per thousand of population. The number of births was 881,241, being in the proportion of 24.4 per thousand. The deaths numbered 527,864, or 14.6 per thousand. The marriage-rate was 0.2 per thousand above that in the previous year, but 0.3 below the average for the preceding ten years. A decline of 0.7 per thousand is recorded in the birth-rate when compared with that of 1910, which was the lowest on record; and last year's rate was 2.8 below the average of the preceding ten years. The death-rate was 1.1 above that in 1910, the lowest yet recorded, but was 0.8 below the average for the preceding ten years. Infantile mortality, measured by the proportion of deaths under one year to registered births was 130 per thousand, or twenty-five above the rate in 1910 and three above the ten years' average. This excess was confined to the third quarter of the year when diarrheal diseases were prevalent and the death-rate among infants was sixty per thousand. The deaths attributed to different forms of violence numbered 20,103, a rate of 0.26 per thousand of population, which is 0.1 below the average for the preceding ten years.

Vaccination Exemption

The increasing exemptions from vaccination since 1899, when the act came into force allowing parents who have a conscientious objection to vaccination to have their children exempted, is causing great concern to the public health authorities, because of the danger of an epidemic of smallpox. As an example, the case of the large metropolitan borough of Hackney may be taken. During the last year 5,413 births were registered and the number of children vaccinated accounted for only 47.4 per cent. The same tendency is shown throughout the whole of England and Wales. Thus the percentages of exemptions to births were as follows: 1908, 17.3; 1909, 20.9; 1910, 25.7; 1911, 28.2.

Women in the Medical Profession

Sir William Collins, Vice-Chancellor of the University of London, in distributing the prizes at the London School of Medicine for Women, showed the great strides in the professions made by women in recent years. The University of London was the first university in the United Kingdom to fling its doors wide open to women under the same conditions as men. There are now on its lists over 2,000 bachelors of arts, 600 bachelors of science, 180 masters of arts, 170 bachelors of medicine, eighty doctors of medicine, twenty-five doctors of science, six masters of surgery, four bachelors of law, four bachelors of divinity, three doctors of literature and two doctors of law—all women. He regarded with satisfaction the larger employment of educated women in administrative offices and secretarial duties especially in connection with higher education and university work. In the large asylums and in school administrative work there would be a large area of usefulness for qualified medical women. He believed that the advent of women in the medical profession

would operate in the direction of importing into it high ideals and aspirations after the true, the beautiful and the good, which would redeem it from a certain commercialism and materialism which are apt to beset it to-day.

A Tracheotomy Tube Worn for Fifty Years

At the Royal Society of Medicine, Dr. St. Clair Thomson showed a tracheotomy tube which had been worn by a woman, off and on, for sixteen years. Frequently the tube was not changed more than once in two years. Altogether, she had worn a tube for over fifty years. The patient did not suffer from bronchitis more than other old people and died of senility at the age of 81. While the value of nasal respiration cannot be questioned, this case shows what wonderful compensations Nature can accomplish and that in certain cases of laryngeal stenosis it may be wiser to put up with a tracheotomy tube than risk uncertain operations. In the discussion which followed, the case was mentioned of a coachman who wore a tracheotomy tube for seventeen years and drove about in all weathers. Sir Felix Semon corroborated the statement that tracheotomy tubes could be worn for an almost indefinite time without fear of bronchitis.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Aug. 23, 1912.

Treatment of Arterial Hypertension by Electric Stimulation of the Abdomen

Professor Doumer read an interesting paper on this subject at a recent session of the Académie des Sciences. He observed that intense voltaization of the abdomen exercises a manifest influence on the peripheral circulation, shown objectively by the lowering of arterial tension measured at the radial pulse in subjects with hypertension, and subjectively by diminution or even complete disappearance of the disturbances which accompany hypertension, such as noises in the head, cold feet and hands, vertigo, etc. Doumer believes that electricity acts not by directly producing vasodilatation but rather by modifying the pathologic conditions of the adrenals. He advises the use, by preference, of intense voltaization; but there is no objection to the additional use of faradization under the form of galvanofaradization. Alternating currents may also be used. The technic is the same as that for the treatment of mucomembranous colitis except that one of the electrodes is placed at the level of the eleventh or twelfth dorsal or the first lumbar vertebra.

Average Medical Expense per Family

Dr. Chapon has endeavored to ascertain by statistics drawn from his own practice and that of several colleagues the cost of medical service to the father of a family. He investigated the accounts of fifty families in moderate circumstances, each composed of four persons, for a period of ten years. The average annual medical expense per family was about $8 (40 francs). In twenty families composed of five persons each there was an annual average of $11 (55 francs); and in ten families of six persons each, an average annual expense of $13 (65 francs), the minimum fee per visit being $1 (5 francs) in each case.

The Reorganization of Medical Studies

The decree of July 29, changing the requirements of the *facultés de médecine*, removed medical natural history from the programs of examinations and substituted bacteriology or parasitology. In the *Semaine Médicale*, Prof. P. Vuillemin criticizes this reform, showing that bacteriology and parasitology do not contain the essentials of medical natural history. The new decree, he says, leaves no room for the organisms which are neither bacteria nor parasites: venomous animals, poisonous fungi, etc., with which physicians have been none too well acquainted hitherto, making the accidents which happen from these causes all the more deplorable. Moreover, the reform appears to him open to criticism from a more essential point of view. It confirms a fault of method which disturbs the equilibrium of our teaching system whose organization rests on the division of labor and the specialization of departments. Parasitology is not a simple science but a combination of natural history, pathologic anatomy, pathology and the other branches of medicine involved in the action of parasites. The same consideration applies even more strongly to bacteriology, a still more complex science since it embraces not only a part of parasitology, but also the study of the bacteria concerned in agriculture and industry, etc.

Campaign Against Alcohol in the French Colonies.

The government is engaged in fighting alcohol in French West Africa. A decree of August 2 raised the tax of alcohol in this colony from $40 to $43 (200 to 215 francs) for French alcohol, and $51 (255 francs) for foreign alcohol.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Aug. 22, 1912.

Personal

Professor Quincke, formerly director of the medical clinic at Kiel, who has been living for some years in Frankfort a. M., celebrated his seventieth birthday August 26.

Prof. O. Müller, a former assistant of Professor Romberg, has been appointed his (Romberg's) successor in the chair of internal medicine at Tübingen.

Misleading Statements From Antivaccinationists

The antivaccinationists have continually endeavored to discredit vaccination and to oppose the requirement of compulsory vaccination because in some circumstances the consequences are injurious. For the dissemination of their propaganda they have begun to publish a special organ. As an illustration of this agitation some cases are cited in the semiofficial "Berl. Korr.," which are as follows:

Their paper, the *Antivaccinationist*, recently gave a letter from a public school teacher; this was reprinted by a Berlin paper with the remark that it was about time for the government to abandon its haughty negative standpoint and, at least, to accede to the modest demands of the antivaccinationists; namely, to allow an inquiry by an impartial commission into the action of compulsory vaccination. The facts in the case published were said to be as follows: The father of a boy had reported to the *Antivaccinationist* that his child, born of healthy parents and grandparents, October 8, 1905, was successfully vaccinated September 26, 1906. Bad results of the vaccination occurred as early as ten days afterwards: the enlarged pupils no longer reacted to light and shadow. After three months three carbuncles developed at the point of the vaccination, from which pus and black blood flowed after they were opened. Five years had passed since and the condition of the child did not improve. The right eye was blind, the left eye had a slight power of vision. To this account were added bitter complaints about the destruction of the happiness of the family, etc. At the end was given a pretended statement of a Magdeburg oculist, according to which the child would not have lost his vision if the vaccination had not been done.

Official investigations with reference to these statements gave the following facts: The child of the school teacher, who made a complaint on account of injury through vaccination, was vaccinated successfully in the ordinary way with unobjectionable lymph. The vaccinationist, who was consulted two weeks after the vaccination because the child could not see, found no pathologic condition of any kind on the vaccinated arm. The Magdeburg oculist who was consulted seventeen days after the vaccination established the existence of a congenital syphilitic affection and ordered an antisyphilitic treatment. Nothing was noted in his records about the ulcerative process. This diagnosis was soon after confirmed by two other physicians. Four weeks after the vaccination a pustule on the upper arm of the child was observed by a physician; this healed kindly in a short time. The physician found no connection between this pustule and the vaccination. Finally the claim of the father as to the statement of the physician was found to be incorrect; the physician had expressly referred the disease of the eye to a cause which was operative for a much longer time. The government has therefore imposed a fine of twenty marks on the teacher.

A second case is connected with a notice to the government from the association of opponents of compulsory vaccination (Verein der Impfzwanggegner). In one Hanover newspaper this notice was made the basis of an appeal to the Reichstag that the latter body should abolish the unfortunate requirement for vaccination. According to the statement, the 2½-year-old child of a woman in Hanover-Linden died on the ninth day after vaccination. The cause of the death was given as blood-poisoning. The physician who was called to attend the child found pneumonia. After the child died, under symptoms of increasing heart weakness, a post-mortem was made which also gave this as the probable cause of death. The findings showed that neither the sickness nor the death of the child could be referred to vaccination.

In a third case vaccination was made responsible by the antivaccinationists *(Bergischer Impfgegnerverein)* for the death of a child. But the officially ascertained facts were completely contradictory to this assumption. The child was attacked with diphtheria and is said to have been sent by the attending physician to a hospital for operation, but died on the way. The mother gave vaccination as the cause of death, in response to printed questions on a card given to her by the antivaccinationists, although she very well understood that the child had died of diphtheria.

Diphtheria in Berlin and in the Empire

As the result of the interest which the increase of diphtheria during the past few years has excited, particularly in Berlin, official investigations have been instituted on the morbidity and mortality from diphtheria in the Prussian state and in the municipal district of Berlin from 1902 to 1911. They show the following facts: The number of cases of diphtheria in Prussia has risen from 54,848 in 1902 to 83,821 in 1910, and to 96,839 in 1911; likewise in Berlin it has increased from 1,485 in 1902 to 6,061 in 1910. On the other hand, the number of deaths has fallen in the period from 1902 to 1910 in the empire from 14,175 to 9,683, and in Berlin has increased from 239 to 695. Reckoned for 10,000 of population, the relative number of cases in the empire has increased from 15.41 in 1902 to 20.87 in 1910, and in Berlin from 7.68 in 1902 to 28.58 in 1910. The relative number of deaths has fallen in the empire from 4.05 in 1902 to 2.48 in 1910, while in Berlin during the same period it has risen from 1.25 to 3.11. From this it is evident that while in the empire the death rate has diminished (in 1876 it was 16.33), this is not the case in Berlin. As a consequence, it becomes increasingly necessary that the authorities, in view of the extensive epidemic in the metropolis of the empire, should enforce with the greatest strictness the sanitary regulations, particularly to make use to the greatest extent of isolation and disinfection, as well as to give information as soon as possible of the results of bacteriologic examination.

Influence of the Use of Alcohol

As a result of official investigation of the effect of the use of alcohol on the frequency and the character of crime, it is shown that there were in 1910 8,674 convictions on account of crime and offence against the imperial law, in which the criminal act was done in a condition of drunkenness, and further 190 convictions in which the criminal act could be referred to the habitual use of alcohol. Of the 8,864 persons convicted twenty-eight were women; 166 were under 18 years of age; 2,925 (33 per cent.) were married or widowed; twenty-four (0.3 per cent.) were divorced. In 150 cases no punishment could be imposed because the criminal at the time of committing the act was in a state of mental disturbance which prevented him from exercising his will.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Aug. 10, 1912.

A New Radio-Active Spring in Joachimsthal

In Joachimsthal in Bohemia, where are the most powerful of all radio-active healing springs, a new spring has been discovered. In searching the mine for pitchblend and radium, a water-current was struck which proved to be four times as radio-active as the strongest hitherto known water. The new spring will be added at once to the baths of the *Curanstalt* or sanatorium, owned by the government. The new water has 8.600 "Mache" units, while the next strongest spring has only 2.280 units.

Sale of Gastein Waters and Baths

The famous baths and waters of Gastein in the Alps, which have hitherto been the property of the Emperor of Austria, have been sold to the community of Gastein, which has been trying for a long time to obtain possession of the springs. Extensive improvements will now be made, so that if necessary, over a thousand baths will be ready for use daily.

Reduced Requirements for Physical Fitness of Recruits for the Army

The new army bill, which has just now become law, is intended to increase the number of recruits; therefore, several relaxations of the previously strict and severe requirements of physical fitness of recruits have been made. Thus, formerly the man had to stand at least 155 cm. (5 feet) barefooted, and had to have an expiratory circumference of the thorax at the nipple line of at least 80 cm. (32 inches). The new law requires a minimum of 150 cm. (4 feet, 10 inches) and a circumference not below 75 cm. (30 inches). Slight anemia, neurasthenia and general weakness of a mild degree, which might be cured by proper food and treatment (in the opinion of the recruiting commission!) will no longer entitle the man to exemption from military service. Such recruits will serve as clerks or as personal servants of the officers, thus liberating others more fit for actual service. Persons engaged in industrial professions can be made recruits and be employed in their respective vocation in the army. The decision of the army physician acting at the recruiting commission is not to be at all binding for the recruiting officer. The physician is simply brought down to the level of an advisory person, even in matters purely medical. This feature will meet with justifiable opposition, for the fitness of the army is intimately connected with the fitness of the individual soldier, which nobody can judge better than the physician.

Anti-Alcohol Movement in the Army

We have in our army a section of officers and men who are strict abstainers from alcohol. In the Tyrol, in the mountainous districts where the Alps go down seldom below 3,000 feet, and where numerous military stations are situated from 4,000 to 5,000 feet high, are stationed a fair number of artillery and infantry regiments. Prolonged experiments have convinced the officers that whenever hard physical or mental work is to be done, or when the energy of the men is put to the severest tests (mountain-climbing, exploring snow and glaciers), absolute abstinence from alcohol is requisite for success. Thus these mountaineers or *Alpenjäger*, as they are called here, have been forbidden to drink any kind of alcohol, except when ordered by the physician, for instance, as a means of resuscitation after exhaustion. The officers of the general staff are also taught to abstain from drink and ere long we may be confronted with an order prohibiting alcohol in the army altogether. For continental ideas this would be an entirely novel departure from inherited customs.

Marriages

DELBERT LINSCOTT JACKSON, M.D., Boston, to Miss Florence Lyon Fisher of Cincinnati, at the Pines, Lyons Falls, N. Y., August 29.

HENRY B. CARRIEL, M.D., Jacksonville, Ill., to JOY RICKETTS, M.D., of South Bartonville, Ill., at Batavia, Ill., September 3.

CHARLES OLIVER BULGER, M.D., Greenfield, Ill., to Miss Pauline Smith of Fayette, Ill., at Chicago, August 14.

LIEUT. GEORGE BURGESS FOSTER, M. C., U. S. Army, to Miss Sara Ellis Thomas of Leavenworth, Kan., September 4.

HAROLD LADD LAMB, M.D., Sauk Centre, Minn., to Miss Grace Whiting of Spring Valley, Minn., August 7.

JOHN BERTON CARNETT, M.D., Philadelphia, to Miss Alice Adele Gemmill of Chestertown, Md., August 31.

WILLIAM ARMSTRONG DEWITT, M.D., Blossburg, Pa., to Miss Mary Day Treat of Wayne, Pa., August 28.

JOHN H. S. CONNOR, M.D., Boston, to Miss Alice V. Carmichael of Cambridge, Mass., September 4.

CARLYLE NEWTON HAINES, M.D., Sayre, Pa., to Miss Bertha Irene Barron of Ashland, Pa., September 4.

CAPT. WILLIAM A. DUNCAN, M. C., U. S. Army, to Miss Sue Ezma Ellis of Russellville, Ky., August 7.

WALTER BRADFORD METCALF, M.D., Chicago, to Miss Anna M. Jump of Houston, Del., August 28.

ERNESTINE DOYCHERT, M.D., Chicago, and Lionel E. Lawrence of New York City, August 13.

ROBERT PAYNE BECKWITH, M.D., to Miss Blanche Caldwell, both of Philadelphia, September 2.

LUCIA C. HOYER, M.D., Milwaukee, and Carl Frederick L. Huth, Jr., of Chicago, August 26.

EMMETT BLACK, M.D., West Brownsville, Pa., to Miss Jenkins of Pittsburgh, recently.

EDWIN CLYDE MORGAN, M.D., Clay Centre, Kan., to Miss Margaret S. Kehoe, August 28.

FRANK ALBERT BARTA, M.D., to Miss Emma Zacharias, both of Ord, Neb., August 20.

ERMY E. NOBLE, M.D., to MARY EVA GILL, M.D., both of Boston, August 20.

Deaths

William Daniel Lamb, M.D. Jefferson Medical College, 1846; first moderator of the town of Lawrence, Mass.; a member of the Massachusetts Medical Society; surgeon of Volunteers during the Civil War; for sixty-six years a practitioner of Lawrence; president of the common council in 1869; for many years coronor of Essex District; a member of the first school committee of the town and for twenty-five years a director of the Pemberton National Bank; died at his home, August 26, from senile debility, aged 88.

James Edward Newcomb, M.D. College of Physicians and Surgeons, New York City, 1883; a member of the Medical Society of the State of New York, the American Laryngological Association and New York Academy of Medicine; professor of clinical surgery in the department of laryngology and rhinology in Cornell University Medical College; consulting laryngologist to Roosevelt Hospital, New York City; died at his summer home in Lake Kushaqua in the Adirondacks, August 27, aged 55.

William James Parker, M.D. Bellevue Hospital Medical College, 1879; a member of the Medical Society of New Jersey and Association of Military Surgeons of the United States; surgeon of the Fourth Infantry, N. G., N. J., and later deputy surgeon general and surgeon general of the state; who was retired from duty about a year ago; a member of the staff of St. Francis' and the Jersey City Hospital; died at the home of his mother in Jersey City, August 25, from typhoid fever, aged 54.

Charles E. Gayer, M.D. Barnes Medical College, St. Louis, 1898; a member of the American Medical Association; president of the Colfax County (N. Mex.) Medical Society; a practitioner of Raton, N. Mex., for fourteen years; surgeon to the New Mexico-Colorado Coal and Mining Company, and superintendent of the Territorial Miners' Hospital, Raton; died in that institution, August 26, from acute dilatation of the stomach following an operation for appendicitis, aged 39.

Warren H. Hunter, M.D. Rush Medical College, 1896; a member of the Illinois State Medical Society; assistant professor of medicolegal pathology in his alma mater; for eight years physician of Cook County; and for four years chief coroner's physician; died in the West Side Hospital, Chicago, September 4, from septicemia due to infection received while conducting autopsies, aged 45.

Charles F. Hopkins, M.D. College of Physicians and Surgeons, Baltimore, Md., 1884; a member of the American Medical Association; for twenty years a practitioner and once mayor of Chinook, Mont.; local surgeon of the Great Northern Railway; health officer of Chouteau County; died at his home in Long Beach, Cal., August 18, from cerebral hemorrhage, aged 53.

Ernest Harold Sparrow, M.D. Harvard Medical School, 1906; a member of the Massachusetts Medical Society; formerly inspector of milk and vinegar for Cambridge, and house physician at the Cambridge Hospital; died at his home in Cambridge, August 27, after an operation recently performed at Johns Hospkins Hospital, aged 32.

Charles A. Wilkerson, M.D. New York University, New York City, 1875; a member of the Medical Association of the State of Alabama and a member of the council of that association; a leading practitioner of Perry County, and for more than twenty years a director of Judson College; died at his home in Marion, August 5, aged 58.

Lawson Harrill, M.D. Jefferson Medical College, 1861; a Confederate veteran; a member of the legislature of North Carolina from Wilkes County in 1878; state small-pox inspector during the epidemic of 1900; mayor and chairman of the school board of Statesville, N. C.; died at his home August 25, aged 74.

John D. Kotheimer, M.D. Cleveland (Ohio) College of Physicians and Surgeons, 1885; one of the founders of the Mahoning Valley Hospital; a member of the board of education of Youngstown, Ohio, from 1898 to 1900; died at his home at that city, August 10, from cerebral hemorrhage, aged 50.

Earl Philip Warren, M.D. College of Physicians and Surgeons, New York City, 1902; of Niagara Falls, N. Y.; died in the Memorial Hospital in that city, August 12, from ptomain poisoning, following an attack of typhoid, aged 39.

John W. Anderson, M.D. Southern Medical College, Atlanta, 1884; mayor of Ringgold, Ga.; died at his home, August 25, aged 49.

James Alexander Paterson, M.D. Queens University, Kingston, Ont., 1889; a member of the American Medical Association; for five years surgeon in the Northwest Mounted Police and later a practitioner of Winnipeg, Man., and Iron River, Wis.; died at his home in Iron River, June 27, from angina pectoris, aged 47.

Horace S. Lewars, M.D. University of Pennsylvania, 1890; a veteran of the Spanish-American War and for twenty-four years an officer of the National Guard of Pennsylvania; a practitioner of Philadelphia; died in the German Hospital in that city, August 26, from cerebral hemorrhage.

Howard G. Purnell, M.D. Jefferson Medical College, 1892; of Ansonville, Pa.; formerly a member of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; died in the Methodist Hospital, Philadelphia, August 9, from nephritis, aged 43.

Jeffrey Conway O'Connell, M.D. George Washington University, Washington, D. C., 1873; one of the oldest practitioners of Washington; an authority on the Gaelic language and literature; died at his home in Washington, August 28, from heart disease, aged 72.

Charles Casbrooke Denniston, M.D. Bellevue Hospital Medical College, 1875; formerly of Crookston, Minn.; died in Medford, Ore., August 23, from the results of a gunshot wound of the head, self-inflicted, while despondent on account of ill health, aged 60.

William C. Shackleford, M.D. University of Virginia, Charlottesville, 1858; University of Pennsylvania, Philadelphia, 1860; surgeon of the Second Virginia Infantry, C. S. A., during the Civil War; died at his home in Stony Point, Va., about August 26.

Henry Hoffman Miller, M.D. New York University, New York City, 1881; a member of the Hunterdon County (N. J.) Medical Society; died at his home in Whitehouse, N. J., August 27, from heart disease, following an attack of pneumonia, aged 58.

Lyman Ulysses Rentz, M.D. Southern Medical College, Atlanta, Ga., 1893; of Cocoanut Grove, Fla.; formerly of Brooksville, Fla. and Dupont, Ga.; at one time local surgeon for the Atlantic Coast Line; died in Valdosta, Ga., August 9, aged 42.

William Harold Vary, M.D. Hahnemann Medical College, Chicago, 1888; College of Physicians and Surgeons, Chicago, 1898; a member of the American Medical Association; died at his home in Oak Park, Ill., August 29, aged 49.

Charles Van Wye, M.D. Louisville (Ky.) Medical College, 1884; a veteran of the Civil War; for many years a resident of Lynn and Sullivan counties, Mo.; died suddenly in front of his office in Browning, Mo., August 26.

Benjamin F. O'Rear (license, Texas 1907, Fifth Judicial District Board, 1892); health officer of Marion County, Texas; a member of the State Medical Association of Texas; died at his home in Jefferson, August 6.

William Kirkwood Robinson, M.D. University of Maryland, Baltimore, 1893; a member of the American Medical Association; died at his home in Los Angeles, Cal., August 25, from malignant disease, aged 42.

David John Price, M.D. Hahnemann Medical College, Philadelphia, 1897; vice-president of the Shenandoah (Pa.) Medical Society; died at his home in Shenandoah, August 28, from cerebral hemorrhage, aged 38.

Henry Francis Borden, M.D. Harvard Medical School, 1869; a member of the Massachusetts Medical Society and one of the oldest practitioners of Brockton, Mass.; died in his home, August 8, aged 67.

Henry Smith Atwood, for nearly fifty years a practitioner of St. Louis, Mo., Pittsburg, Kan., and Galena, Kan.; died at his home in Galena, July 25, from senile debility, aged 84.

John A. McCreary, M.D. Medical College of the State of South Carolina, Charleston, S. C., 1886; died suddenly at his home in Williston, S. C., August 9.

Adam Walrath, M.D. Albany (N. Y.) Medical College, 1879; died at his home in St. Johnsville, N. Y., August 7, from cerebral hemorrhage, aged 50.

Robert L. Parkin, M.D. Detroit College of Medicine, 1896; died at his home in Romeo, Mich., August 27, from heart disease, aged 51.

Joseph N. Strange (license, Arkansas, 1903); of Hartford; was shot and killed in a pistol duel in Hartford, August 24, aged 45.

Horace H. Wolff, M.D. Baltimore Medical College, 1890; died at his home in Providence, R. I., in August, aged 47

The Propaganda for Reform

CONVICTIONS UNDER THE FOOD AND DRUGS ACT*

WOOD'S SOOTHING SYRUP

William J. Wood, Trenton, N. J., shipped in interstate commerce a product called Wood's Soothing Syrup. Some of the claims made on the labels for this preparation were:

"It is a sure cure for croup."

"A preventive against taking cold."

"For sick stomach and general debility."

"For asthma and phthisic this extraordinary remedy affords immediate relief."

"Affords speedy relief in all cases of acute pains, gripings, severe vomiting, bowel complaints, teething, restlessness, sore throat, whooping cough, all coughs and colds, all throat, bronchial and nervous affections."

When analyzed by the government chemists, it was reported to be a watery-alcoholic solution of opium, aromatic bodies, sugar, inorganic salts and undetermined matter. It was declared misbranded, in that the amount of alcohol and opium was misstated on the label. W. J. Wood pleaded non vult and the court suspended sentence. — [*Notice of Judgment No. 1322.*]

RALSTON'S SELECT BRAN AND ACME DIABETIC FLOUR

The Acme Mills Company of Portland, Ore., who claim to be the "only authorized manufacturers for the Pacific Coast of Ralston Health Breakfast Foods," was charged with misbranding two products, "Ralston Select Bran" and "Acme Diabetic Flour." "Ralston Select Bran" was sold under the following claims:

"Prepared as a beverage, it is the most refreshing drink that ever passed human lips."

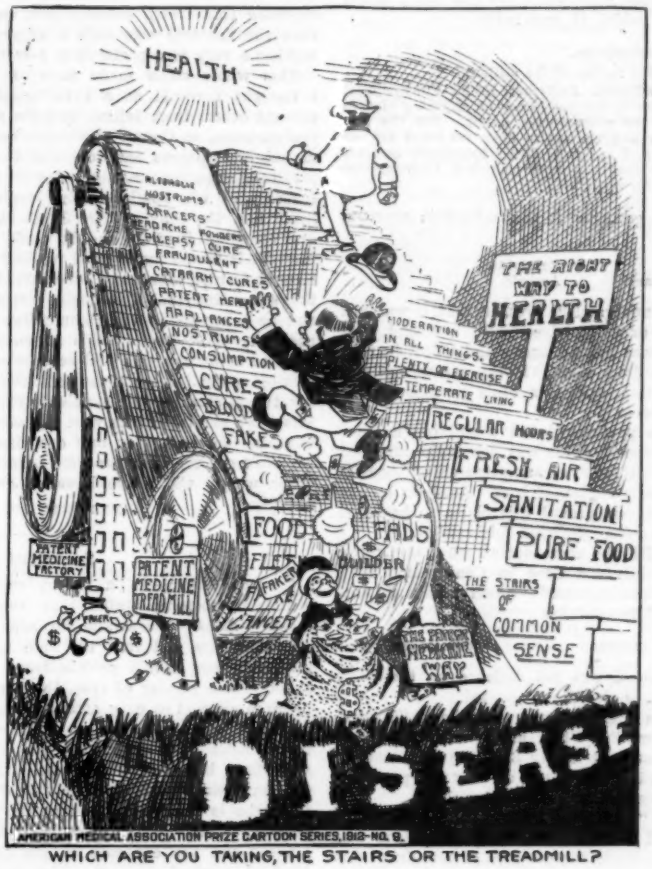
"The phosphorus contained in the bran is vitally necessary for the development and vigor of the human frame."

"The drain on the system is replenished by the phosphatic nourishment contained in this simple but wonderful beverage."

"It aids digestion, cures torpidity of the liver, gives tone and color to the complexion, brightness to the eye, and is both nerve and brain food."

Misbranding was alleged because, as a matter of fact, the phosphorus said to be contained in "Ralston Select Bran" was not "vitally necessary for the development and vigor of the human frame." Furthermore, the label represented that the product contained and had some special properties not common to ordinary bran when, as a matter of fact, it was nothing more than ordinary bran. It was also declared misbranded because it did not aid digestion, cure torpidity of the liver, give tone and color to the complexion or brightness to the eye, nor was it a nerve or a brain food. In the words of the government report: It "had no virtues or properties beyond those of ordinary bran."

"Acme Diabetic Flour" was sold under the claim that it was "milled by special process to preserve gluten properties of wheat." While this statement was calculated and intended to give purchasers the idea that gluten was the principal ingredient of Acme Diabetic Flour, the analyses of the government chemists showed that the product did not contain any more gluten than is found in ordinary whole-wheat flour. It was further declared misbranded, in that the stuff was sold for the use of those afflicted with diabetes, to whom starch is dangerous. Yet Acme Diabetic Flour contained 71.4 per cent. starch — an amount equal to that found in ordinary flour. The defendant was found guilty and filed a motion for a new trial. The motion was overruled and the court imposed a fine of $50 and costs.—[*Notice of Judgment No. 1507.*]



WHICH ARE YOU TAKING, THE STAIRS OR THE TREADMILL?

DR. CALDWELL'S RHEUMATISM CURE

"John" W. Horter—the first name being a fictitious one—of New York shipped to the state of Tennessee a consignment of "Dr. Caldwell's Rheumatism Cure." This nostrum was sold under the following claims:

"Sure to cure."

"Cures by expelling the acids from the blood."

"Restores the liver, kidneys and the skin to a healthy condition — thus effecting a permanent cure."

"A certain cure for acute and chronic rheumatism in all its forms, gout, sciatica and lumbago."

The stuff was analyzed by the chemists of the Bureau of Chemistry, who reported finding:

Alcohol	Salicylic Acid	Ammonia

Besides these, traces of bromids, a chlorid, an alkaloid (not identified), sodium and phosphorus were found. Misbranding was alleged in that while the preparation contained 14.5 per cent. of alcohol, no statement was made on the label to that effect. Horter pleaded guilty and was fined $200.—[*Notice of Judgment No. 1544.*]

DR. CALDWELL'S ANTI-PAIN PILLS

Dr. Caldwell's Anti-Pain Tablets, put out by the Dr. Caldwell Medical Company, Poughkeepsie, N. Y., was another product shipped in interstate commerce by "John" W. Horter. These tablets when analyzed by the government chemists were reported to contain:

* One hundred and forty-eight convictions previously reported in popular form, are issued in an illustrated pamphlet, "Convictions," price 6 cents.

Acetanilid	51.4 per cent.
Caffein	12.3 per cent.
Corn-starch	23.2 per cent.
Camphor	present.

Although these tablets contained more than 50 per cent. acetanilid, the presence of this drug was not declared on the label. Hence the charge of misbranding, to which Horter pleaded guilty and was fined another $200.—[*Notice of Judgment No. 1545.*]

HOFF'S CONSUMPTION CURE

Hoff's Consumption Cure was exposed in THE JOURNAL, Feb. 6, 1909, p. 489, and the matter appears in "Nostrums and Quackery." It is sold by Maurice C. Schlesinger, who does business under the firm name of Bendiner & Schlesinger, New York. The following claims were made for the stuff, either in or on the package in which it was sold:

"Prof. Hoff's Cure for Consumption."

"A positive remedy from the recipe of the author."

"Were the lungs alone affected, Professor Hoff's Consumption Cure could be relied on without the assistance of anything else to rid the system entirely of the consumption germs. But the kidneys, the stomach, the liver and the entire digestive tract are all weakened by Consumption, and are most likely to require at least a tonic treatment in order that the Professor Hoff Consumption Cure may take hold and do its work."

When analyzed by the government chemists, this nostrum was found to contain:

Morphin	Potassium
Cinnamic acid	Arsenic

The stuff was declared misbranded, first, in that it was not a "cure" for consumption or a "positive remedy"; second, that the presence of morphin was not declared; and third, in that it was not true that this drug would rid the system entirely of the germs of consumption, even if a tonic treatment were applied in conjunction therewith.

With the "cure" was a pasteboard box containing another nostrum labeled "Superlatone." This was the tonic supposed to be used in connection with the "consumption cure." According to the label, Superlatone contained iron. Analysis by the government chemists, however, proved this claim to be false, and Superlatone was, therefore, declared misbranded.

A third bottle came with the consumption cure, this being labeled "Adjunct Cough Mixture Used in Conjunction with Prof. Hoff's Cure for Consumption." When analyzed, this cough mixture was found to contain:

Alcohol	Codein	Chloroform

As the presence of alcohol was not declared on the label, this preparation also was declared misbranded.

Bottle No. 4 that came with the cure was labeled "Concentrated Appolozer's Mixture." While analysis demonstrated that this preparation contained nearly 8 (7.88) per cent. of alcohol, the label declared the presence of only 2.5 per cent. Misbranding was therefore alleged in this case also.

Package No. 5 in the "cure" was labeled "Kodal Tablets." These tablets were found to contain codein. Since there was nothing on the label to indicate the presence of this drug, this preparation, too, was declared misbranded. Schlesinger pleaded guilty to the government's charges, and the court imposed a fine of $25.—[*Notice of Judgment No. 1551.*]

Correspondence

One Editor's Attitude Toward the Samuels Fraud

To the Editor:—Last fall a chronic diabetic patient came into my office and asked me for information concerning a certain nostrum which was administered by dropping the same into the eyes of the patient. [The Prof. Samuels fraud; see THE JOURNAL, Dec. 24, 1910 and "Nostrums and Quackery," p. 230.] The literature was extensive and the claims were extravagant. Every known disease, it was said, could be cured by this method, as the medicine followed the optic nerve directly into the brain and thus through the entire nervous system to every part of the body thereby eradicating disease, purifying the system, etc. I asked the patient if he really thought such things were possible by the use of a medicine that must be mild enough not to irritate the delicate membrane of the eye. His answer was that Mr. Blank, naming a chronic asthmatic, whom I have treated at different times, had used a vial of the medicine and that it had completely cured him of his asthma. He used it during July and August, the time of year when he was seldom troubled with the disease. Since then he has been as bad as ever.

Another diabetic patient died in Platteville during the last winter who had used three bottles of the medicine without benefit. Both of these users were poor people who could ill afford to spend $5 per vial which was the cost of the medicine. Some time after this I noticed an article in THE JOURNAL exposing this fraud, stating that on analysis it was found that the nostrum was only a sugar and salt solution, thus making a very nice profit on a 4-dram vial which sold for $5.

This whole affair made such an impression on me that I thought I would do a little missionary work to try and prevent others from falling into the same error by purchasing the nostrum, so I went and interviewed the proprietor of one of our local papers and told him the whole story as I have just related to you and suggested that if he would publish the formula of the medicine the people were buying I would bring him the copy of THE JOURNAL containing the analysis and comment thereon, and he could publish the same and I thought it would make good reading for the public, and that I could furnish him many other articles from time to time on the same line that I thought would be interesting reading and be a benefit to the community. Did he accept the proposition? Not much! His argument was that the people liked to be humbugged, and he showed me a copy he was then getting ready for the press of a two-column article advertising the celebrated (?) syndicate of physicians, which makes this town at stated intervals. In other words, if he published anything derogatory to any one class of fakers, he probably wouldn't get the business from others of the same class or in other words, the whole business hinged on a money basis entirely.

JAMES OETTIKER, M.D., Platteville, Wis.

Specialism

To the Editor:—At a recent convention of otologists a prominent member stated that there was enough work in otology alone to warrant its separation from laryngology and rhinology and that the man who would do good work in the former should refrain from operating in these other fields. As a matter of fact, the majority of otologists, even in large cities, not only attend nose and throat patients, but also give some attention to ophthalmology. In the smaller towns most ophthalmologists are also ear, nose and throat specialists, but otology has become largely a matter of brain surgery. No man is qualified to do a radical mastoid operation who is not a capable surgeon and a capable brain surgeon at that. The exploration of the labyrinth, of the sinuses and the exposure of the dura is the most delicate kind of cerebral surgery. The opening of the frontal and ethmoidal sinuses demands the same special knowledge.

If, therefore, there is to be a distinct division between the present eye, ear, nose and throat specialist and the more modern ear surgeon, why not create an entirely new specialty, namely, that of cephalogist or craniologist, medical and surgical? The surgical craniologist should be competent to operate on every organ of the head—ear, nose, throat, eye or brain, the medical craniologist to diagnose and treat (otherwise than by operation) all disturbances of the brain and the special head organs.

A similar division of the abdominal organs might be made, abdominal surgery to pertain to surgery on stomach, intestines, liver, kidney and generative organs, male or female, and abdominal medicine to confine itself to diagnosis and treatment of non-surgical diseases affecting such organs. Gynecology as a separate specialty has no longer any reason for existence, nor should there be need for the so-called genito-urinary specialist.

With such a classification of specialists there should come special preparation for those undertaking the specialty. Dr. Jackson of Denver has made an earnest plea for the better training of eye specialists. Eminent surgeons have condemned the poor training of the average man who undertakes abdominal surgery. By placing all major surgery, whether it be on the mastoid, the frontal sinuses, the tonsils, the appendix, the uterus or the penis in the hands of specially trained operators and leaving the diagnosis and non-surgical treatment of these organs in possession of another class of specially trained internists, there can be created a body of well-trained specialists qualified to do what is required of them.

The otologist may by special preparation qualify himself to do brain surgery, but he is then no longer an otologist pure and simple. The gynecologist who removes gall-stones is working outside of his specialty, but there is no reason why a well-equipped modern surgeon should not remove a cataractous lens from the eye as many of the famous surgeons of old were in the habit of doing successfully. The man who would practice surgery, be it of the ear, the nose or any other organ, should not be bothered with the routine treatment or even the tedious examination of patients. He should not even have the responsibility of making a diagnosis. The internist should make all the necessary tests, locate the disease, determine as to its operability or not and then summon the operator, just as the anesthetist is employed. Such cooperation will mean safer and more scientific work, and will do away with much of the amateur surgery of to-day. It will tend to create a group of practicians who will give their entire attention to finer methods of diagnosis and treatment in the various specialties without feeling that unless they perform major operations they are not entitled to be called specialists. There are many good surgeons who are very poor diagnosticians. These, too, will find their proper place. They will not be called on to treat symptoms that they cannot bring into relation with other phenomena. They will find room for their superior technical ability. Surely some rearrangement of the specialties is necessary.

M. V. BALL, Warren, Pa.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

REMOVAL OF TATTOO MARKS

To the Editor:—Do you know of any chemical or drug that will remove or discolor the tattoo ink from the skin?

W. H. HORTON, M.D., DeRidder, La.

ANSWER.—The methods of Variot and of Brault have been recommended for the removal of such marks. The principle in each is to excite an inflammatory process by means of chemical irritants so as to cause destruction of the superficial layers of the skin.

Variot's plan of treatment, according to Brocq, is as follows: First, he places on the tattoo marks a concentrated solution of tannin, and tattoos this in. Then a silver nitrate pencil is rubbed vigorously over the surface until the surface becomes black from the formation of silver tannate in the superficial layers of the skin, and the surface is then washed with water. In the next few days a slight inflammatory reaction occurs, and over the surface treated a closely adherent dark crust forms. After the third or fourth day there is no pain except when there is movement of the muscles under a large crust. Occasionally there is a little suppuration under the crusts, but if secondary infection is avoided no severe inflammation occurs. After fourteen or sixteen days the crust comes off spontaneously, the corium and the epidermis underneath have been repaired, and the locality of the mark is recognizable only by a superficial pink cicatrix which gradually becomes of normal color. A couple of months after the operation the scar is hardly noticeable.

Brault's method of removing tattoo marks consists in tattooing the region, previously rendered aseptic, with a solution of 30 parts of zinc chlorid to 40 parts of water. The needles with which the tattooing is done are dipped in this solution and the surface is lightly moistened with the same solution after the tattooing. If properly done the resulting inflammation is slight and after a few days, there forms a superficial crust which remains about a week and then falls, leaving a slight, eventually almost imperceptible, scar. This method succeeds in a few cases but requires skill and care in its application in order to obtain good results and to avoid suppuration and deep cicatrization.

THE INTERNATIONAL CONGRESS ON HYGIENE AND DEMOGRAPHY

To the Editor:—Can you tell me something about the International Congress on Hygiene and Demography? B. D.

To the Editor:—Is there an exhibit of some sort in connection with the hygiene congress at Washington? To whom can I write for full information? M.

ANSWER.—These and other inquirers have been answered direct, but for the information of others we call attention to the fact that there have been repeated announcements in THE JOURNAL concerning this congress. An extended one, giving parts of the extensive program, a survey of the exhibit, and the names of those to whom one may write for full information, was given in THE JOURNAL, August 24, page 661. A statement concerning membership in the congress was given August 17, page 550.

PHYSICIANS AND LOCAL CHAUTAUQUAS

To the Editor:—The chautauqua season is over. Do you know what a chautauqua is? It is a cross between a camp-meeting and vaudeville. The entertainments consist of popular lectures, interspersed with brass bands, songs, legerdemain and sometimes *lenteur de cervelle*. The lecturers, some of them, are instructive; some of them have lubricated tongues, athletic lips, and stale brains, and their forte is ridiculing medical men and the medical profession by telling jokes that were common before the flood, doubtless were told in Ham's barber shop in the ark, and were immensely enjoyed by saurian intellects who never heard of Drs. Reed, Carroll, Lazear, Agramonte or Gorgas. The opaque gas-maker is far too frequent a public educator. JOSEPH T. CLEGG, Siloam Springs, Ark.

ANSWER.—If a lecture course or chautauqua does not adequately or fairly represent medical science of to-day, it may be the fault of the medical profession. In many communities prominent medical men are on the chautauqua programs, telling the people about medical progress and enlightening them on hygiene and healthful living. Some of these numbers are among the most interesting and well attended on the program. It will usually be found that the committee on management will welcome assistance from the medical profession, if it is a harmonious, unified body of educated men. County societies and groups of physicians who want assistance in this work, or who want to find out what other societies are doing and what speakers can be obtained, should correspond with the Council on Health and Public Instruction of the American Medical Association, 535 Dearborn Avenue, Chicago. The Council has a list of speakers who are ready to make interesting addresses on various subjects pertaining to medical science, especially hygiene, sanitation and popular medicine. A county society has itself to blame if it fails to offer cooperation in a chautauqua, for this method of public education is one of the easiest and most effective possible. In this connection see two current comments in THE JOURNAL, Sept. 7, 1912, p. 810.

As to jokes in which the physician receives the laugh, we advise our correspondent not to be too sensitive. We would not excuse for a moment the joke that is bitter, vicious or low, but a kindly, wholesome joke should be enjoyed by every one. Members of other professions, even the clergy, are not exempt from being made the objects of jokes. Every race, trade and profession has its peculiarities and foibles, and the humorists do not overlook them. When the victim of a harmless joke resents it, both the humorist and the interested auditors are delighted; to join in a joke turns the edge away and promotes good feeling and sympathy.

CAPITALS IN THE NAME "CHRISTIAN SCIENCE" AND OTHERS

To the Editor:—Please give me the reason for capitalizing "Christian Science" and not "homeopathy." XXXX.

ANSWER.—Various reasons may influence different persons in treating a given name as a proper noun. Apart from the fact that "Christian," being a proper adjective, is almost invariably capitalized, we capitalize "Christian Science" while lower-casing "homeopathy" for the same reason that we capitalize "Warner's Safe Cure" while lower-casing "strychnin," "iodin," "sodium acetate," etc.; chiefly for the reason, to wit, that each capitalized name is a descriptive title imply-

ing an assertion for which we do not care to be responsible. If we were to write "Warner's safe cure," we should imply that it *is* safe and a cure. The use of an authenticated proper name, capitalized as such, involves no responsibility for its appropriateness. Frank Green may be a confidence man and Lily White a pronounced brunette. There can be no impropriety in calling either by the name bestowed by parents and godparents, but there might be some risk in dropping the capitals and asserting or implying that the one is frank and green and the other lily white. Capitals are marks of distinction; whether they constitute badges of honor, commercial labels or convicts' tags depends entirely on circumstances.

THE NEW BUTTON OF THE ASSOCIATION

To the Editor:—Please explain the new button of the American Medical Association. Some of us have a hazy idea of its meaning and a good many do not understand it at all.

THOMAS CRUICKSHANK, Vermillion, S. D.

ANSWER.—In reply to this and other inquiries, we quote from the report made to the House of Delegates by the committee appointed to devise a suitable emblem for the Association: "Your committee believes that it (the emblem) should convey a definite meaning both in colors and design. It was easy to determine that scarlet and gold had been the medical colors since ancient times. . . . It was also determined by your committee that the true ancestral symbol of the healing art is the knotty rod and serpent of Æsculapius." An article by Dr. Samuel P. Gerhard, Philadelphia, "The Appropriate Insignia for the American Medical Association" (THE JOURNAL A. M. A., April 24, 1909, p. 1325) elaborates on the appropriateness of the use of the knotty rod and serpent.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

PROGRESSIVISM AND PUBLIC HEALTH

One of the most encouraging features of the present public health propaganda is the growing recognition of the economic and sociologic value of public health. Some of the leading newspapers of the country have recognized this fact and have included a demand for better health conditions as one of the planks of the constructive platform which they are advocating. Two recent editorials in the Chicago *Tribune*, one of the most prominent of the progressive papers, emphasize the marked change in public opinion which has occurred in the past few years. In its issue of September 3, the *Tribune*, under the heading, "The Greatest of Our Needs," says:

"No nation can take and sustain a prominent place in the modern world that fails to develop and utilize the powers and ability latent in all classes of its people. The people whose wise men evolved that principle have accomplished perhaps the greatest feat of nation-building and wealth-creating in history.

"This people is not the Japanese, although they have done wonders in a quarter century. They are the Germans.

"Germany is the great scientific nation. That is, it is the nation which has most deliberately and persistently applied organized knowledge and systematic thought to the problem of making a community of efficient men, to minimizing the natural disadvantages of the land they occupy and making the most of all available advantages, to building up the national wealth and improving all the means by which modern peoples compete with their rivals in the world.

"Germany is a triumph of will directed by intelligence.

"And efficient education is the corner-stone of her greatness."

The *Tribune* then discusses the value of recent scientific advances in changing our views on practical education and the influence of proper educational methods on industrial and social conditions.

On the following day, September 4, under the title "Real Progressivism," the *Tribune* continues the discussion of these principles, applying them to health instead of to education. The editor says:

"This country has grown rich because of the masterly people who inhabit it and the great resources with which nature has endowed it. We have been so all-powerful that it never occurs to us to take stock.

"Year by year we have skimmed the cream and thrown away the milk. We have assumed that this was good policy because—have we not prospered? Tired, overused land is worth more to-day than fresh land was worth forty years ago; therefore, must not our land policy be right?

"But of late the more thoughtful and far-seeing Americans have realized the fallacy of these easy theories and the accumulating evil of our wasteful practice. It is an interesting paradox that one of the consequences of our success is to warn us that we must no longer pursue success in the old way. That is, our great wealth and enlarged facilities for wealth-production have driven us into competition with the world, and competition is teaching us. So long as we remained provincial we learned little from outside. Now we have become aware that other people are wise, are strong, are able, are energetic as well as we—and we are learning that some are wiser and stronger in some respects than we.

"The chief of these lessons is that the most formidable of our rivals exert especial pains to protect and conserve as their greatest national resource—their people.

"They have reduced their typhoid death-rates until they are less than one-third the rates prevailing with us.

"They have cut their consumption rates to about half what they once were, as compared with a reduction that nowhere in this country exceeds 25 per cent.

"Germany inaugurated a great movement for the protection of the vital resources of its working people more than a quarter of a century ago. England has been developing a similar policy during the last ten years. Meanwhile we have rather relied on fresh, strong, young country men and women coming into the cities, and on the cream of the virility and strength of Europe—our stream of sturdy immigrants—to keep our death-rates down and our standards of human efficiency up. . . .

"Men of great wealth who have profited by illegal combinations and unfair business methods sometimes salve their consciences by contributing money freely, magnificently, to great philanthropic enterprises. As these sums are oftentimes drawn from unwarranted and unfair profits, the burden of disease and illness, poverty and inefficiency falls indirectly, when it does not fall directly, on the shoulders of the people.

"This is a vicious circle. It should be replaced by a more logical process. The collective intelligence of the nation, of the great American community, should deal directly with the conservation of the people's health and strength. We need to get rid of a lot of dead lumber in our public discussions and get hold of some practical truths, as that—

"Malaria decreases the value of land at least $10 an acre.

"Hookworm, by producing inefficiency, influences the price of cotton goods more than the tariff.

"Pellagra is a problem as important as currency reform.

"Consumption is of more consequence than the coinage of silver.

"Pauperism is a practical problem that deserves the most persistent and thorough study.

"Social justice is a necessity if our republic is to endure.

"The *Tribune* believes that the kind of help given the farmer for his stock should be given him for his family; that communities should be helped to banish consumption and typhoid fever; that mothers should be protected during child-bearing; that the slaughter of the innocents should cease, as far as it is possible to make it cease; that children should be given a chance to grow up in strength; that men should be enabled to labor at high efficiency; that prevention should replace cure; that pauperizing of men by charity should give place to a scientifically developed scheme for the care of those who need to be cared for along broad economic lines.

"For the development of such broad activities proper machinery will be devised as a matter of course. The particular type of machine—whether departments of health, commissions, health services, health bureaus, or national insurance departments—is a matter of detail."

The *Tribune* has well expressed the views of an increasingly large number of people. As is usual in political and social development, the radical views of the progressive minority to-day will be the accepted views of the majority of to-morrow. Human betterment in all its phases is the most important problem for a civilized nation. In this problem there is no more important factor than the conservation of life and health, through the suppression of preventable disease.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 7-8. Sec., Dr. John Wix Thomas.

COLORADO: Denver, October 1. Sec., Dr. David A. Strickler, 612 Empire Building.

GEORGIA: Regular, Atlanta, October 8-10. Sec., Dr. C. T. Nolan, Marietta; Homeopathic, Atlanta, October 3. Sec., Dr. R. E. Hinman, 106½ Whitehall St., Atlanta.

IDAHO: Idaho Falls, October 1-2. Sec., Dr. O. J. Allen, Bellevue.

ILLINOIS: Coliseum Annex, Chicago, September 24-26. Sec., Dr. James A. Egan, Springfield.

KANSAS: National Hotel, Topeka, October 8. Sec., Dr. H. A. Dykes, Lebanon.

MICHIGAN: Capitol Bldg., Lansing, October 8-10. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: State University, Minneapolis October 1. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.

MISSISSIPPI: Capitol, Jackson, October 22-23. Sec., Dr. W. W. Smithson, Coates House.

MISSOURI: Kansas City, October 1-3. Sec., Dr. Frank B. Hiller, Jefferson City.

MONTANA: The Capitol, Helena, October 1, 1912. Sec., Dr. William C. Riddell.

NEW JERSEY: Capitol Bldg., Trenton, October 15-16. Sec., Dr. H. G. Norton.

NEW MEXICO: Santa Fe, October 14. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: September 17-20. Chief of Examinations Division, Mr. Harlan H. Horner, Department of Education, Albany.

OKLAHOMA: Muskogee, October 7-9. Sec., Dr. John W. Duke, Guthrie.

RHODE ISLAND: State House, Providence, October 3. Sec., Dr. Gardner T. Swarts.

UTAH: Salt Lake City, October 7-8. Sec., Dr. G. F. Harding, 310 Templeton Building.

WYOMING: Riverton, October 9-11. Sec., Dr. A. B. Tonkin.

Reciprocal Relations Restored

Reciprocal relations between New York and New Jersey, providing for the endorsement of medical licenses, were reestablished by the Board of Regents of New York at a meeting held August 26, 1912. Such relations had previously been arranged but were cancelled in 1910 because of a decision by the attorney general of New Jersey which revealed a weakness in the New Jersey practice act. According to that decision the medical student could not be required by the examining board to have completed, nor in fact to have had, any high school work prior to beginning the study of medicine, but was privileged to pursue both high school and medical courses at the same time if he so desired. In other words according to this decision, the medical student's "preliminary" education did not need to be preliminary. Recent amendments, according to report, have corrected this defect in the law and, as a result, reciprocal relations between the two states have been restored.

Ohio April and July Reciprocity Reports

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports that at the meetings held by that Board April 2 and July 9, 1912, 27 candidates were licensed through reciprocity. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University Medical School	(1895)	Wisconsin; (1898) Minnesota; (1910) Illinois.
College of Physicians and Surgeons, Chicago	(1905)	Wisconsin
Rush Medical College	(1901)	Illinois
Indiana University, School of Medicine	(1909)	Indiana
Kentucky School of Medicine	(1898)	Indiana
Detroit College of Medicine	(1897)	Michigan
University of Michigan, Homeopathic College	(1910)	Michigan
Michigan College of Medicine and Surgery	(1897)	Michigan
University of Michigan, Dept. of Med. and Surg.	(1910)	(1911) Michigan.
Barnes Medical College	(1897)	Missouri
Homeopathic Medical College of Missouri	(1877)	Missouri
Washington University, St. Louis	(1903)	Missouri
Marion Sims College of Medicine	(1897)	Missouri
Long Island College Hospital	(1900)	New York
University and Bellevue Hospital Medical College	(1899)	Michigan; (1907) New York.
University of Buffalo	(1899) (1900)	New York
Medical College of Ohio	(1893)	Kentucky
Cincinnati College of Medicine and Surgery	(1900)	Kentucky
Western Reserve University	(1891)	Kentucky
Hahnemann Medical College and Hospital, Philadelphia	(1889)	Maryland; (1909) Indiana.
Jefferson Medical College	(1881)	W. Virginia

Arizona July Report

Dr. John Wix Thomas, secretary of the State Board of Medical Examiners for Arizona, reports the written examination held at Phoenix, July 1-2, 1912. The number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75, and not less than 60 in any one branch. The total number of candidates examined was 9, of whom 8 passed and 1 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
College of Physicians and Surgeons, Los Angeles	(1912)	84.1
Chicago College of Medicine and Surgery	(1912)	85.3
Rush Medical College	(1912)	85.7
Louisville Medical College	(1906)	78.6
Homeopathic Medical College of Missouri	(1908)	81.4
Washington University, St. Louis	(1908)	86.6
Columbia University, College of Phys. and Surgs.	(1898)	86.5
University of Virginia	(1905)	78.6

FAILED

Tennessee Medical College	(1907)	65

The following questions were asked:

ANATOMY

1. What arteries supply the heart with blood, and where do they originate? 2. Describe the thoracic duct. 3. Describe the thyroid gland, including blood- and nerve-supply. 4. Where is the fissure of Sylvius and what artery does it contain? 5. What muscles assist in (a) mastication? (b) deglutition? 6. Describe the diaphragm, its principal openings and nerve-supply. 7. Name the bones of the head. 8. Name the ligaments of the hip-joint. 9. State (a) the nerve-supply of the rectum and (b) the blood-supply of the rectum. 10. Describe the inguinal canal.

PATHOLOGY

1. Define hyperemia and give varieties and causes. 2. Define transudate and exudate, with examples of both. 3. Define (a) embolism; (b) thrombosis, and give examples. 4. Define and give symptoms of inflammation. 5. Describe the pathologic findings in typhoid fever.

BACTERIOLOGY

1. Describe the technic of staining for tubercle bacilli. 2. Define immunity and classify same. 3. Define (a) phagocytosis; (b) antitoxins; (c) vaccine. 4. Describe the gonococcus and give method of staining. 5. Give Koch's rules or dicta in regard to the bacterial cause of diseases.

CHEMISTRY AND TOXICOLOGY

Answer ten only. 1. What element occurs most abundantly in Nature and what are three of its more common combinations? 2. Atmospheric air is composed of what elements and in what proportion by volume? 3. Give definition of acids and formulas of six acids commonly used in medicine. 4. Define a salt and explain the difference between normal and basic salts. 5. What are hydrocarbons? Mention three. 6. Give difference between alcohols and ethers. 7. What chemical elements occur in all proteids? Name three common proteids. 8. What are the common sources of acetic acid? 9. Name the normal constituents of human milk and their approximate proportions. 10. Give treatment of arsenic poisoning. 11. What is the chemical antidote for phenol (carbolic acid) poisoning? What would you use for a physiologic antidote? 12. What is the best treatment for poisoning by strong mineral acids?

PHYSIOLOGY

Answer five only. 1. What part of the nervous system is involved in stammering speech? 2. Describe the pneumogastric nerve and its functions. 3. Describe lymph and how it is formed. 4. Classify foods and give a general description of each. 5. What is the pulse and what do its varieties signify within physiologic limits? 6. Describe the physiology of menstruation. 7. Briefly describe visual accommodations.

HYGIENE

Answer five only. 1. What means should be taken to prevent spreading of small-pox? 2. What means should be taken to prevent spreading of diseases in schools? 3. What regimen should be enforced in the sick-room of tuberculous patients? 4. Why should we abolish the common drinking-cup? 5. Describe the proper care of foods in stores and markets and why. 6. What are the dangers from drinking water from an unprotected watershed? 7. Why are plumbing fixtures ventilated?

MATERIA MEDICA

1. Define materia medica and therapeutics. 2. Define tincture, extract and ointment. 3. By what process and from what source is sugar of milk principally obtained? 4. State the source of ichthyol and give its uses in medicine. 5. Give the Latin title of paregoric; name all its constituents and give the amount of the principal drug in 1 ounce of the mixture. 6. Give the composition of the official compound cathartic pill. 7. Name the alkaloids of nux vomica. 8. What is incompatibility in medicine, and what are the different kinds of incompatibility? Give an example of each. 9 Describe four diuretics and give dose of each. 10. What class of acids would you use to acidify alkaline urine? Name one and give dose.

PRACTICE OF MEDICINE

1. Differentiate between cerebral vomiting and gastric vomiting. 2. In what diseases does leukocytosis occur? 3. What is the significance of prolonged expiration? 4. Describe the mitral regurgitant murmur; give the topography of the chest showing where this sound is best heard. 5. Mention the causes and describe the treatment of primary lobar pneumonia. 6. Define angina pectoris; what pathologic condition may cause it? 7. On what symptoms would you base a diagnosis of typhoid fever? 8. Give the period of incubation and of the eruption of the exanthemata. 9. What is the cause of syphilis? 10. Give the symptoms and blood-picture of chlorosis.

OBSTETRICS

Answer ten only. 1. Give the diameters of the fetal head in inches. 2. Give the diameters of the pelvis in inches. 3. Differentiate

between normal pregnancy, tumors within the abdominal cavity and ectopic gestation. 4. What maternal condition would warrant destruction of fetal-life? 5. When the action of the uterus is insufficient what measures and remedies may be used to bring about normal contraction? 6. Should you find albumin and tube casts in the urine of a pregnant woman what morbid condition would be indicated, and what would be your treatment? 7. Diagnose placenta prævia and give treatment. 8. What is the principal cause of ophthalmia neonatorum, and what means should be used to prevent it? How would you treat a case? 9. Give position of the fundus at three, five and seven months. 10. Name some of the causes and dangers incident to protracted labor. 11. Make a diagnosis of syphilis in the new-born. State something concerning the prognosis. 12. Describe how you would conduct normal labor.

GYNECOLOGY

1. (a) Define endocervicitis; (b) give the symptoms, and (c) treatment. 2. What are the indications for curettage? 3. Define (a) dysmenorrhea; (b) amenorrhea; (c) menorrhagia, and (d) metrorrhagia. 4. Mention the varieties of uterine displacements. 5. (a) Define urethral caruncle; (b) give its histology; (c) symptoms and (d) treatment. 6. Make a diagnosis from the following history: (a) A woman, aged 26, mother of three children. Menstruation stopped two months ago. Patient seized with abdominal pain, cramp-like in character, appearance of uterine hemorrhage; rapid pulse, anemic, increased leukocyte count, temperature first subnormal then elevated. Physical examination shows breast enlarged, uterus enlarged, os soft and mass in lateral fornix. (b) Describe in detail the treatment. 7. Discuss the etiology of cancer of the uterus. 8. Describe the clinical history of a large ovarian cyst. 9. Make a differential diagnosis between interstitial fibroids of the uterus and an ovarian cyst. 10. Describe an operation for amputation of the cervix.

SURGERY

1. What is inflammation? How does inflammation extend and how may it terminate? 2. Give the symptoms, diagnosis and treatment of phlebitis. 3. Name the inflammatory diseases of bone. 4. How would you arrest epistaxis? 5. What symptoms follow division of the radial nerve? 6. Name the varieties of shoulder-joint dislocations. 7. Name the causes of delayed bone union and give treatment. 8. Differentiate dislocation of the head of the femur from fracture of its neck, and give essentials of treatment of each. 9. Describe a method of amputation of the last phalanx. 10. Describe dermoid cysts. In what situations are they most commonly found?

Book Notices

MOTIVE-FORCE AND MOTIVATION-TRACKS. A Research in Will Psychology. By E. Boyd Barrett, S. J., Doctor of Philosophy, Superior Institute, Louvain. Cloth. Price, $2.50. Pp. 225. New York: Longmans, Green & Co., 1911.

This is a technical laboratory study on formation of character and education of the will. The author believes that the essential elements of character are expressed in the choice-process. For this purpose he instituted 1,100 experiments, by means of which he reached the conclusion that when a choice has to be made between two alternatives, the choice is quick and easy in proportion as the values of the alternatives are clearly and definitely known. From the moment a person grew doubtful about the position of a substance on the scale of values, all regularity and certitude were at an end. Motivation was no longer swift and easy. Volitional force, instead of being economized, was wasted. Hesitations occurred and the functioning of the will grew more and more arduous and painful. Generalizing, then, he thinks that a person who consistently, without hesitation or capricious movements, takes the best of the two alternatives, with more and more ease, and that for intrinsic motives, is one who has "a well-fashioned will," a good character. This interesting psychologic study cannot fail to stimulate further research in a hitherto but little-cultivated field.

SURGICAL OPERATIONS. A Hand-Book for Students and Practitioners. By Prof. Friedrich Pels-Leusden, Chief Surgeon to the University Surgical Clinic. Translated by Faxton E. Gardner, M.D. Cloth. Price, $7. Pp. 726, with 668 illustrations. New York: Rebman Company, 1912.

The work of Pels-Leusden comes near to accomplishing the difficult task of successfully teaching operative technic to both students and practitioners. The author is an exponent of German surgery and makes only incidental mention of American surgical procedures. The need for conciseness and the selection of only classical procedures justify this omission. The custom of Americans translating German and French works of inserting references to American works along similar lines is desirable for American readers, provided it does not deviate too much or overshadow the original. The translator has succeeded in putting the text into good English. He might, in some instances, have been a little less faithful to the long German sentences of the original text. In scientific works, the facts weigh more than the language, and such works should be freely translated, without injury, of course, to the original statement. A valuable feature is the mention of standard methods of postoperative technic and indications for surgical interference in the most common postoperative complications. It is to be regretted that in most books on surgery for students these things are omitted. The illustrations, while correct and faithful to the description contained in the text, lack the art which characterizes the work of the Johns Hopkins school, being in most instances either diagrams or semidiagrammatic. The chapter on anesthesia, illustrated by very complicated apparatus for narcosis, gives the impression that the Germans should learn the simple method of ether anesthesia which is responsible for the low primary mortality from anesthesia in the United States. The table of contents constitutes a useful regional classification and the index is detailed and complete.

TECHNIK DER KLINISCHEN BLUTUNTERSUCHUNG. FÜR STUDIERENDE UND AERZTE. Von Dr. A. Pappenheim, Berlin. Paper. Price, 2 marks. Pp. 55. Berlin: Julius Springer, 1911.

This little book presents only the essential and clinically valuable methods of blood examination. The three cardinal features of hematology, namely, staining, counting of cells and estimation of hemoglobin, are especially emphasized, while the chemical and physical methods are ignored. The methods selected are those proved reliable by Pappenheim in his extensive work and are, therefore, of more than passing interest. Thus, his method of staining is a modification of the combined May-Grünwald and Giemsa stain, which gives very panoptic results. Sahli's method of estimating hemoglobin is preferred.

PRAKTISCHE NEUROLOGIE FÜR ÄRZTE. Von Prof. Dr. M. Lewandowsky. Paper. Price, 6.80 marks. Pp. 300, with 20 illustrations. Berlin: Julius Springer, 1912.

This is a small text-book for the general practitioner, in which a large portion is devoted to general methods of examination and a discussion of the leading facts in practical neurology. The publication of short text-books for practitioners is a new feature in German medical literature, which abounds with monographs and large treatises on nervous topics, while our own literature is blessed with a superabundance of the former and a scarcity of the latter kind of writing. The book is thoroughly up to date, containing also brief accounts of important advances in the treatment of nervous disorders.

ELEMENTS OF HYDROTHERAPY FOR NURSES. By George Knapp Abbott, M.D., Dean of the Faculty and Professor of Hydrotherapy and Practice of Medicine in the College of Medical Evangelists, Loma Linda, Cal. Cloth. Price, $1.50. Pp. 273. Washington: Review and Herald Publishing Association, 1911.

In the preface the author states that he has endeavored "to cover the subject in only an elementary way." This is exactly what he has done; the book is elementary. In an elementary way it takes up the physical properties of water; the effects on the body after hot and cold applications, the action of the skin in hydrotherapy; and the effect of hydrotherapy on the circulation and muscles. The treatment of various disorders and diseases is discussed, and then the technic of the various methods used in this form of therapy.

DIE ENTSTEHUNG DER KURZSICHTIGKEIT. Von Dr. Georg Levinsohn. Paper. Price, 2.50 marks. Pp. 88, with 3 illustrations. Berlin: S. Karger, 1912.

In this essay the author contends that myopia is caused by the overflexion of the head on the trunk in the attempt to use the eyes for near work. He explains his theory on the ground of gravity pulling the eyeball away from the optic nerve, thereby lengthening the axis and causing short-sightedness. In consonance with his theory he proposes that school-benches be so constructed that unnecessary bending of head and trunk be obviated. Further, pupils should be constantly admonished to maintain an upright posture while reading or writing.

Society Proceedings

COMING MEETINGS

Amer. Assn. for Study, etc., of Infant Mortality, Cleveland, Oct. 2-5.
Amer. Assn. of Obstetricians and Gynecologists, Toledo, Sept. 17-19.
American Association of Railway Surgeons, Chicago, Oct. 16-18.
American Public Health Association, Washington, D. C., Sept. 18-20.
Assn. of Military Surgeons of the United States, Baltimore, Oct. 1-4.
Colorado State Medical Society, Pueblo, Sept. 24-26.
Conf. State Bds. of Health of N. Am., Washington, D. C., Sept. 20-21.
Delaware State Medical Society, Wilmington, Oct. 8.
Indiana State Medical Association, Indianapolis, Sept. 26-27.
Internat. Congress on Hygiene, etc., Washington, D. C., Sept. 23-28.
Kentucky State Medical Association, Louisville, Oct. 29-31.
Medical Association of the Southwest, Hot Springs, Ark., Oct. 8-10.
Mississippi Valley Medical Association, Chicago, Oct. 22-24.
National Association for Study of Pellagra, Columbus, S. C., Oct. 3-4.
Nevada State Medical Association, Reno, Oct. 8-10.
Pennsylvania State Medical Society, Scranton, Sept. 23-26.
Utah State Medical Association, Ogden, Sept. 24-25.
Vermont State Medical Society, Montpelier, Oct. 10-11.
Virginia Medical Society, Norfolk, Oct. 22-25.
Wyoming State Medical Society, Sheridan, Sept. 17.

Medicolegal

Damages Recoverable for Negligent Failure to Deliver Telegram From Physician

(Alexander vs. Western Union Telegraph Co. (N. C.) 74 S. E. R. 449)

The Supreme Court of North Carolina says that the plaintiff became ill with an attack of appendicitis. Her attending physician was of opinion that an operation was immediately necessary, but was unwilling to undertake it with the facilities at hand, and undertook for her to ascertain by telegraph if a physician at a city hospital would operate, the patient not being able to pay until later. A favorable reply was sent, but never delivered, and arrangements were thereafter made for an operation at another place. In affirming a judgment for damages in the plaintiff's favor, against the telegraph company, for apparently $1,000 for alleged mental anguish in not hearing from the first physician inquired of by telegraph, the court says that the right of an addressee or a beneficiary whose interest has been made known to the company to recover for a negligent failure to deliver a message of this character is fully established in North Carolina and that the plaintiff's cause was brought within the principle of the decisions of that state where substantial damages by reason of mental anguish have been allowed.

Expert and Non-Expert Opinions as to Diseases—Hypothetical Questions

(Shawnee Gas & Electric Co. vs. Hunt (Okla.), 122 Pac. R. 673)

The Supreme Court of Oklahoma holds that a graduate nurse who has never nursed a case of epilepsy is not competent to testify as to whether certain symptoms indicate epilepsy; it not appearing from the evidence that nurses, as part of their training as such, are taught to diagnose diseases. It says that the court could not presume that a nurse must learn the diagnosis of diseases as part of her training as such. It cannot be denied that a nurse is competent to testify that a person has had a "fit," but, under the circumstances stated, she is not competent to testify as to merely epileptic conditions, as shown by certain symptoms. Any persons could testify as to whether or not another had had a "fit," but it might require some considerable study of diseases to be able to testify whether a "fit" was of epileptic character. It is believed that it is safer to confine expert testimony, in which the witness is permitted to give an opinion, to those persons who have had special training in the diagnosis and treatment of diseases. Of course a person without professional skill, who has observed another whose condition is under investigation, may be permitted to testify as to whether or not his condition is normal or abnormal, as for instance whether he is sane or insane, but it is not safe to permit any one except physicians to make distinctions as to what particular diseases or ailment the abnormality points to, as for instance with what particular form of insanity a patient is affected.

It was contended that a hypothetical question was improper because of an explanation or direction given to the witness at the beginning of the question, but no authorities were cited in support of the contention, and it does not seem to be supported by reason. It was a mere statement to the witness as to what the examiner intended to state in the question, and added nothing to the facts as stated, and did not appear to require any particular answer. Where experts are called as witnesses, it is usual and not improper to inform them beforehand as to the nature of the question they will be called on to answer, and there is no reason why a statement of this sort to a witness on the stand should be more improper than it would be in the lawyer's office before the trial began. Again, it is almost impossible to state a question of more than 500 words without making it complicated. It is very doubtful if any juror is ever able to follow a hypothetical question sufficiently to remember and consider it in detail in the making of a verdict. It is proper, too, to ask a witness who testifies as an expert what causes, in his opinion, produced certain results. Such a question is not objectionable as calling for a conclusion of the witness, nor as invading the province of the jury. The jury is not compelled to follow his opinion. It may not believe his opinion the correct one.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Yale Medical Journal, New Haven, Conn.

May, XVIII, No. 9, pp. 357-445

1. Connecticut a Doctor of Consumptives. S. J. Maher, New Haven.
2. Medical Expert Testimony. H. G. Anderson, Waterbury, Conn.
3. *Experiences with Salvarsan in Syphilis. J. M. Flint and W. F. Cunningham, New Haven.

3. **Salvarsan in Syphilis.**—Ten syphilitics who were otherwise free from disease were given a single injection of salvarsan. In the series there were no primary lesions. Of the secondary lesions, several types of skin rash and tonsillar and pharyngeal ulcers were present, and of the tertiary cases, there were bone lesions in the form of gumma and osteomyelitis of the humerus, ulcers of the pharynx, leg, rupia and an old squamous syphilid of the palms. The effect of the injections were most marked on the pharyngeal and tonsillar ulcers, which cleared up in from five to seven days. The skin lesions healed in from ten days to two weeks, although there was often a persistent pigmentation such as follows the healing of any chronic lesion for a week or two longer. The rupia and squamous syphilids disappeared in from two to three weeks, while the large syphilitic ulcers began to show evidences of repair in a few days, but the time consumed in the healing process naturally depended on the extent of the ulceration.

Of the bone lesions, the gumma showed the effect of salvarsan earliest, the pain disappearing in a few days, and a distinct decrease in size was observed in a week. The clavicle appeared practically normal in about six weeks. In a case of syphilitic osteomyelitis, there was a distinct improvement as far as the pain was concerned in a week, and, in three weeks, a radiograph showed an absorption of the periosteal deposits and a clearing up of the shotted appearance of the shaft.

The only case in the series which showed resistance to the drug was one of congenital syphilis with interstitial syphilitic keratitis. It is doubtful, in this instance, whether the improvement was any more rapid than with the ordinary treatment of atropin and mercury.

The local reaction to the subcutaneous injections in two cases consisted in pain and tumefaction. The local reaction in the intravenous injections was *nil* in all cases save one,

in which a small amount of the drug escaped in the tissues about the vein. In this instance, there was pain and swelling which lasted for several days. The systemic reaction has varied in the intravenous series from none at all to a transitory increase in temperature and pulse-rate, accompanied in some cases by nausea and vomiting and a few diarrheic stools. In no instance has the reaction been severe enough to cause any alarm, and in most, the patients have noticed nothing out of the ordinary in their condition.

In each case, with three exceptions, the red and white corpuscles were counted, the hemoglobin estimated, and a differential count made. The majority of cases showed a slight increase in the number of reds and an average increase in about 5 per cent. of hemoglobin in the interval of a week that elapsed between the two estimations. The number of whites varied somewhat with the condition and were naturally higher in cases in which ulceration was present with consequent absorption, but neither a constant increase nor decrease in the number of leukocytes was observed after the injection. The differential counts showed nothing of interest, the relative percentages being apparently unaffected by the administration of the drug.

In no case has the Wassermann reaction been permanently negative. In two cases there was evidence of a transitory nephritis. The conclusions which the authors draw from the observation of this series of cases seems to be in accord with the experience of others, namely, that salvarsan in most instances is a symptomatic specific. Its control of the lesions of syphilis is remarkably rapid and complete, but permanence of the cure as indicated by the Wassermann reaction cannot be expected from a single dose or even a number of doses.

Delaware State Medical Journal, Wilmington

August, III, No. 9, pp. 1-26

4. Conservative Surgery of Pelvic Organs. H. J. Stubbs, Wilmington.
5. Relation of Physician to Pharmacist. W. H. Kraemer, Wilmington.

Vermont Medical Monthly, Burlington

August 15, XVIII, No. 8, pp. 183-208

6. Neuralgia. S. W. Paige, St. Albans.
7. Criminality; Physician as Factor in Prevention; Crime on Increase. B. Joseph, Burlington.

Washington Medical Annals, Washington, D. C.

September, XI, No. 4, pp. 189-216

8. Value of Sophol in Prevention of Ophthalmia Neonatorum. J. F. Moran, Washington, D. C.
9. *Oily Injections of Salvarsan. H. H. Hazen, Washington, D. C.
10. Study of Mental Deterioration. D. P. Hickling, Washington, D. C.

9. **Oily Injections of Salvarsan.**—In the sixteen months that Hazen has been using the oily injections they have been found to be superior to the other intramuscular ones in two ways: first, ease of usage, and second, in the freedom from pain. Hazen's formula is as follows: Gum camphor, half dram; monomethylcatechol (guaiacol), half dram; paraffin oil, enough to make one ounce. Just enough of this oil is used to make a fine, smooth emulsion; about 5 c.c. are usually required. The technic of preparation and injection is simple. All that is needed in addition to the oil and the salvarsan is a suitable syringe and a small mortar and pestle. A 5 c.c. syringe may be used, but one in which the end of the plunger is cut off square, and is not round, as in the latter case, some of the emulsion may work up between the plunger and barrel of the syringe and jam. The portal of exit of the syringe should be large, and a needle of from seventeen to twenty gauge used. Inasmuch as the syringe must be absolutely dry, it should be first lubricated with castor oil and then sterilized by dry heat, or it may be boiled and then cleaned with alcohol and ether; the former method is much the better. The very slightest quantity of moisture may cause a hopeless gumming. The mortar and pestle may be boiled and allowed to dry. The tube of salvarsan is broken into the mortar and the oil added drop by drop, constantly grinding until a perfect emulsion is secured. It is then drawn into the syringe and the injection made in the usual way.

Following the suggestion of Dr. Fowler, about 0.5 c.c. of air is injected along the needle so as to prevent the oil from escaping into the subcutaneous tissues. The injections may be made into either the gluteal or lumbar muscles. To date Hazen has forty-two cases with fifty-three injections, all injections being given in the buttocks. He says that a small injection of 0.3 gram gives even less trouble than a full injection, so it is wise to give two half doses at one sitting rather than a full dose. His results have been about the same as with the other types of intramuscular injections; most of the secondary skin manifestations, and all the mucous patches, condylomata, and throat ulcerations cleared up speedily, while some of the tertiary lesions did very well and some were uninfluenced.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

August, XVI, No. 2, pp. 41-97

11. Uterine Hemorrhage a Symptom Frequently Seen in Pellagra of Women. C. H. Peete, Warrenton, N. C.
12. Amebic Dysentery. R. D. McMillan, Red Springs, N. C.
13. Chronic Nephritis, a Neglected Study. J. D. Willis, Roanoke, Va.
14. Fellows of Alumni of Medical College of Virginia. J. M. Burke, Petersburg, W. Va.
15. Medicine in Lay Literature. B. M. Randolph, Washington, D. C.

Bulletin of Manila Medical Society

July, IV, No. 7, pp. 137-145

16. Epidemic of Bacillary Dysentery in Baguio. M. A. Barber and L. Gomez.
17. Dysentery at Camp John Hay, Baguio. P. M. Ashburn and E. B. Vedder, U. S. A.
18. *Effect of Methylene Blue on Intestinal Parasites in Man. C. H. Schultz, Seattle, Wash.

18. **Effect of Methylene-Blue on Intestinal Parasites in Man.**—A personal experience and laboratory observation showed Schultz that methylene blue is evidently destructive to certain low forms of animal life; but not to all. The larval forms of the pinworms in the upper intestines are killed by the drug, but not the mature worms in the colon and rectum. For this reason we must exhibit the drug during the time that the pests are in the larval stage. Cleanliness will limit reinfection. Treatment with methylene blue pills extending over five days, eighteen to twenty-four 1 grain pills daily (for a full grown, otherwise healthy man), the entire treatment to be taken three times, ten days apart, has destroyed these pests in Schultz's alimentary canal on three different occasions. A slight headache and pronounced tinnitus aurium, similar to the effect of large doses of quinin, became noticeable on the second day. On the last day a marked laxative effect produced liberal evacuation of the bowel. Urine and feces remained dark blue. Sedimentation and microscopic examination of the urine failed to show anything but a few cuboidal renal cells, some cells from the epithelium of the bladder and numerous calcium oxalate crystals. The feces were stained dark blue, even the mucus appeared blue. Careful search failed to show oxyuris in the feces, or ova or larva from the vicinity of the anus. After three months no parasites have reappeared.

Kentucky Medical Journal, Bowling Green

August 15, X, No. 16, pp. 635-666

19. Fractures of Skull. J. G. Sherrill, Louisville.
20. La-Grippe. S. S. Prather, Louisville.
21. Parinaud's Disease. J. H. Simpson, Louisville.
22. Gonorrheal Rheumatism. J. A. O. Brennan, Louisville.
23. Acute Articular Rheumatism Treated with Phylacogen. E. B. Richey, Louisville.
24. Tuberculosis of Bladder. H. Bronner, Louisville.
25. Disseminated Sclerosis. F. C. Askenstedt, Louisville.
26. Hemophilia; Report of Case. H. A. Davidson, Louisville.
27. Severe Chorea in Child Under Four Years of Age; Report of Case with Exhibition of Patient. D. Y. Keith, Louisville.
28. Delirium Tremens from Paraldehyde; Report of Case. M. Board, Louisville.
29. Cholesteatomata of Ear. W. T. Bruner, Louisville.
30. Operation for Traumatic Epilepsy. C. G. Forsee, Louisville.
31. Appendicitis. M. Casper, Louisville.
32. Acute Gastro-Enteric Infection. W. W. Morton, Catlettsburg.

Therapeutic Gazette, Detroit

August 15, XXXVI, No. 8, pp. 533-608

33. Differential Diagnosis Between Brain Abscess and Sinus Thrombosis, Treatment of These Conditions. E. B. Dench, New York.
34. Three-Step Operation in Tumors of Sigmoid and Colon. J. P. Tuttle, New York.
35. Ointment of Scarlet Red in Treatment of Eye Diseases. W. O. Nance, Chicago.
36. *Effect of Tuberculin (Bouillon Filtrate) on Pulse in Pulmonary Tuberculosis. R. T. Pettit, Ottawa, Ill.

36. **Effect of Tuberculin on Pulse in Pulmonary Tuberculosis.**—Pettit claims that in cases with a low grade temperature but persistently high pulse, 100 to 125, tuberculin (bouillon filtrate) is of value in restoring the pulse-temperature balance. The explanation of this action may be that a toxin neutralization follows the injection of the soluble antigen.

Pennsylvania Medical Journal, Athens

August, XV, No. 11, pp. 843-924

37. Economic Relations of Social Disease. R. N. Willson, Philadelphia.
38. Race Suicide. D. C. Guthrie, Philadelphia.
39. The Human Body, a Chemically Regulated Organism. R. E. Lee, Meadville.
40. Ocular Manifestations of General Disease. N. J. Weill, Pittsburgh.
41. Plea for Early (Preperforative) Diagnosis of Extrauterine Pregnancy. P. G. Skillern.
42. Ectopic Gestation. S. D. Molyneux, Sayre.
43. *Ectopic Gestation, with Report of Case at Full Term, in Which Fetus was Carried in Abdomen for Thirty-Five Years. F. N. Yeager, Hamilton.
44. Treatment of Internal Hemorrhoids by Operation of Excision. H. D. Beyea, Philadelphia.

43. Abstracted in THE JOURNAL, Aug. 10, p. 443.

Boston Medical and Surgical Journal

August 22, CLXVII, No. 8, pp. 239-270

45. Blood Transfusion: Indications, Methods and Results. B. Vincent, Boston.
46. Case of Intrarectal Rupture of Suppurating Sinus from Hip Joint Disease. R. W. Jackson, Fall River, Mass.
47. Doctor Who Volunteers for Military Service in Time of War. C. G. Foster, Cambridge, Mass.
48. *Thirty-Nine Cases as Regards Intestinal Length and Nutrition. L. T. Swaim, Cambridge, Mass.
49. Private Obstetrical Record. J. R. Tobbert, Boston.
50. Progress in Obstetrics. R. L. De Normandie, Boston.

August 29, CLXVII, No. 9, pp. 271-310

51. *Acquired Hallux Valgus: Late Results from Operative and Non-Operative Treatment. C. R. Metcalf, Concord, N. H.
52. Neurology of Child: Mortality and Proportion of Backward Children in Cases of Congenital Syphilis Subsequent to Hospital Treatment. W. P. Lucas, Boston.
53. Progress in Treatment of Neuroses. E. W. Taylor, Boston.
54. *Tuberculosis in Aged and Diagnostic Value of Increased Whisper in Interscapular Space. H. F. Stoll, Hartford, Conn.

48. **Intestinal Length and Nutrition.**—Ten dissecting room cadavers and twenty-nine bodies seen at a necropsy were carefully examined by Swaim as to the length of the intestines. He found ptosis present in nine cases. The size of the stomach varied enormously and the tubular stretched stomach was present in most of the cases of ptosis—six out of nine—and the lesser curvature can be greatly stretched down, this series shows. The small intestines vary greatly in length, 10 feet 6 inches to 25 feet 10 inches, averaging 19 feet 3 inches, the length having only slight effect on the nutrition, with a tendency to more fat the longer the intestine and vice versa.

The large intestines vary also, averaging 5 feet 3 inches, extremes 3 feet 8 inches to 8 feet 5 inches. When the stomach is low the large intestine is apt to be longer and the cecum large and pendulous, the greatest length being in the transverse colon and sigmoid. The total average length of the entire intestines is 24 feet 6 inches. A rather significant fact is that not only the hollow viscera are displaced, but even more often the solid, such as the liver, which was below the costal border in twenty cases.

51. **Acquired Hallux Valgus.**—Metcalf summarizes his paper as follows: Hallux valgus refers to an outward displacement of the big toe—largely from mechanical causes—with inward displacement of the first metatarsal bone and hypertrophy and erosion of its head. Bunions and hammer toes often accompany. The longitudinal arch may drop; the anterior arch is nearly sure to do so. Oftentimes symptoms are due primarily to these defects. By non-operative treatment, therefore, an effort has been made to hold the feet in approximately normal position; in non-aggravated cases this may be done by wearing proper shoes and plates. Other forms of treatment have proved of doubtful merit.

Advanced cases demand operation. Fifteen operations, many of them closely allied, have been devised. The operations fathered by Wilson and by Barker have not met with success. Better results have followed employment of the methods of Porter, Hueter and Mayo, remembering always that the two latter may subsequently require plates. Other operations have not been tried, so that the value of tendon transplantation, removal of the sesamoids and like details cannot be fairly expounded. Syms' dictum is worth noting: Employ different procedures for different deformities. Always operate on the deformity, not on the bursa. Finally, the most acceptable incision, the question of drainage, of splinting, of shoes and other details of after-treatment should be carefully considered for the individual case.

54. **Tuberculosis in Aged.**—Stoll states his belief that pulmonary tuberculosis is not an uncommon disease in persons past 60 years of age. It is more prevalent than the mortality suggests as an acute pneumonia is often the ultimate cause of death. In persons in the latter decade of life the disease is chiefly characterized by its extreme chronicity and by periods of relatively good health. Many people contract tuberculosis each year from the intimate association with some elderly member of the household who has had a "stomach cough" or "catarrh" for "as long as he can remember." The examination of the sputum of elderly people for tubercle bacilli is a much neglected procedure. The recognition of the pulmonary lesion is often difficult as the typical physical signs are frequently marked by some other condition, notably asthma or emphysema. In these cases the key to the diagnosis will often be found in the interscapular space. The detection of bronchial gland enlargement in adults speaks for tuberculosis rather than chronic bronchitis or emphysema.

American Journal of Orthopedic Surgery, Philadelphia

August, X, No. 1, pp. 1-169

55. Treatment of Structural Scoliosis. A. H. Freiberg, Cincinnati.
56. Action of Extrinsic and Intrinsic Muscles of Foot from Anatomic and Mechanical Standpoint. L. T. Brown, Boston.
57. Structure and Mechanism of Human Joints in Health, Disease and Injuries. G. G. Davis, Philadelphia.
58. Roentgen-Ray Study of Gastro-Intestinal Findings in Multiple Arthritis. G. R. Elliott, New York.
59. Some Considerations on Pathology and Treatment of Toxic Arthritis. P. W. Nathan, New York.
60. Abdomen an Important Factor in Chronic Joint Affections. F. E. Peckham, Providence, R. I.
61. Static Joint Diseases, Their Etiology and Relation to Arthritis Deformans. G. Preiser, Hamburg.
62. Apparatus to Be Used in Application of Plaster Jackets and for Photographic Record of Scoliosis. A. O'Reilly, St. Louis.
63. Etiologic Studies in Osteoarthritis. L. A. O. Goddu, Boston.
64. Traction Spreader Device to Prevent Plantar Flexion of Foot. N. Allison, St. Louis.

Journal of Arkansas Medical Society, Little Rock

August, IX, No. 3, pp. 61-90

65. *Tumors of Urinary Bladder. E. S. Judd, Rochester, Minn.
66. *Diagnosis and Treatment of Pruritus. I. Dyer, New Orleans.
67. *What the General Practitioner Too Often Overlooks. W. Breathwit, Pine Bluff.

65. Abstracted in THE JOURNAL, June 29, p. 2048.

66. **Diagnosis and Treatment of Pruritus.**—There are no specifics for itching, says Dyer, but there are medications in particular diseases which may apply for general use, of course individualizing the case in hand. Arsenic is the prime treatment for the nervous basis of the disease, and its administration is largely corrective of the itching. The derivatives of wheat and oats may aid in these types and the tincture of avena sativa (wild oats) is of special usefulness, given in conjunction with the arsenic. Where there is no neuropathic cause or association, the arsenic not only does no good, but it may actually do harm by local over-stimulation. Strychnin serves excellently in the vasomotor disturbances with itching. Zinc phosphid acts similarly, and is of special service in chronic itching diseases. Cannabis indica, in the fluid extract, may be used every hour in five-drop doses; as soon as the acute itching is controlled, the dose may be reduced and the period of administration lengthened to every three or four hours. Chlorid of calcium is of service in senile pruritus and in all itching where there is any suggestion or evidence of lowered coagulability. Freshly prepared chlorid of calcium may be administered in 5 to 15 grain doses, well diluted and repeated every three or four hours. Antipyrin and salicylate of soda, used in combination, serve best in gouty subjects or in uric acid cases. The use of the sodium and potassium citrates, at the same time, materially aids in the treatment. Gelsemium, codein, veratrum viride, bromids, chloral hydrate and chloroform are among the antispasmodics which have good effect

in stopping the paroxysms of itching, but any and all of these may be relegated until the above named drugs have been first essayed. The too free use of morphin for itching should be condemned. With all cases of pruritus, mild laxatives, diuretics, mineral waters of alkaline sorts, diet restrictions and limitations by injunction, habits, etc., should be carefully weighed and considered where indicated.

The local treatment of pruritus is of considerable importance and needs to be suited to the particular case. General baths are of supreme service in the treatment of itching, and these should be taken as hot as can be comfortably borne. Such baths may be employed in all diseases or conditions in which itching is general. The baths may be plain or may carry such emollients as starch, marshmallow or bran (in bags), or alkalies may be added, such as carbonate of soda (℥ss to ℥i to 30 gallons of water), household ammonia (℥i, ℥ii to the 30 gallons), or suphuret of potassium (℥ii, ℥i to the bath), the last named being especially indicated in all parasitic diseases, vegetable or animal. Wet dressings may be substituted for the general bath, when the itching is so localized as to permit of such. The dressings should be kept wet with saturated boracic acid solution, 1-5,000 to 1-10,000 mercuric chlorid solution, 1 per cent. phenol solution, 1-5,000 potassium permanganate solution, or 1 or 2 per cent. solutions of resorcin, in water always. Fixed dressings of coal-tar made into a felt with superimposed cotton may be applied and left in place for days at a time. Even dry cotton may be firmly bound in place, when such a dressing can be so fixed that the patient cannot remove it easily.

Oily substances may be employed and the old-fashioned carron oil may be used, or camphor and chloral hydrate. Cocoa butter and cocoanut oil are excellent protective applications when the skin is dry. An oily substance of excellent antipruritic value in small areas may be derived by combining phenol, menthol, camphor and chloral hydrate, and this may be diluted with any of the simple oils. Itching of the anal area is frequently relieved by ergot, used either in ointment made with the fluid extract or in suppository with the solid extract. Intestinal parasites should be excluded or removed. Genital pruritis is often helped with weak resorcin solutions. The use of the high frequency spark over the sacral plexus is an excellent adjuvant for genital pruritus and a systematic general effleuve will often aid when other remedial agents fail. All cases of pruritus should be studied as individual types, and the etiology should be determined when possible; then the way to cure will be easier.

67. Abstracted in THE JOURNAL, June 29, p. 2048.

Wisconsin Medical Journal, Milwaukee

August, XI, No. 3, pp. 71-102

68. Surgery of Stomach. W. D. Haggard, Nashville, Tenn.
69. Pellagra; Report of Four Cases Occurring in Milwaukee. O. H. Foerster, Milwaukee.
70. *Gonorrhea in Women; Special Reference to Prophylaxis and Sequelæ. C. M. Echols, Milwaukee.
71. Painless Hematuria. H. L. Kretschmer, Chicago.

70. Abstracted in THE JOURNAL, June 22, p. 1969.

Medical Record, New York

August 31, LXXXII, No. 9, pp. 369-414

72. *Practical Method of Prophylactic Immunization Against Tuberculosis. K. Von Ruck, Asheville, N. C.
73. Modern Means of Investigating Mental Processes. W. J. M. A. Maloney, New York.
74. *Nasal Obstruction as Early Symptom of Cardiorenal Disease. W. M. Barton, Washington, D. C.
75. Unusual Conditions Simulating Appendicitis. H. W. Einsheimer, New York.
76. Treatment of Puerperal Eclampsia. R. E. Coughlin, Brooklyn.
77. Removal of Adenoids as Preventive Measure After Exposure to Measles. J. B. Greene, Asheville, N. C.

72. Published in THE JOURNAL, May 18, p. 1504.

74. **Nasal Obstruction as Early Symptom of Cardiorenal Disease.**—Nasal obstruction, in Barton's opinion, should be termed among the little incidents rather than accidents of Brightism. In a personal case it preceded any other symptom by several years, and was a rather prominent feature. Inquiry disclosed the fact that the patient had never had any of the symptoms mentioned under the expression of Dieulafoy, *"les petits accidents du Brightisme"* except the *"doigt mort,"* and this sign was late in appearing since he did not feel it until the beginning of the acute onset of his disease.

As to the explanation or pathogeny of such a symptom as nasal obstruction regarded in the light of an early manifestation of cardiorenal disease, the most rational theory, he says, would seem to be that it is in some way due to insufficient urinary depuration; in other words, to slight or latent uremia, the so-called petite urémie of the French authors. On this hypothesis it might be assumed that in certain individuals in whom the erectile tissues of the nose are in a state of hypersusceptibility the accumulated products of metabolic disassimilation may give rise to a sufficient degree of irritation to produce swelling of the mucous membrane and consequent obstruction of the nose, either as a result of edema of the parts or as a result of vasomotor disturbances set up.

Barton's patient, a very intelligent man, has always been physically robust. He has been troubled with nasal obstruction for over twenty years. The difficulty in breathing through the nose was insidious in its onset, and did not follow any acute inflammatory condition. At first and for a long time it was not complete and he could breathe better at times than at others, and one nostril was usually worse than the other. He had no symptoms of catarrh. His work was all indoors and he was not exposed to draughts or cold. About fourteen years ago he noted some dyspnea if he mounted stairs rapidly.

Seven years ago the obstruction became so complete at times as to cause him great annoyance and he consulted a rhinologist, who proposed an operation to which he readily consented. The operation consisted in an excision of hypertrophic tissue from both nostrils. Immediately after the excision he was relieved of the symptom of obstruction and remained so for about a year or more, when he noticed it began to return and at the end of two years was as bad as before the operation. Barton saw the patient for the first time March 23, 1912. About two weeks previously he had been taken sick with terrific retching and coughing during the night, accompanied by expectoration of large amounts of thin, frothy, mucoid sputum. The retching was accompanied by such intense dyspnea that he was forced to sit up in bed to breathe. On account of the nasal obstruction he was forced to breathe largely through his mouth. He noted that his pulse was accelerated and believes that he had slight fever. The attack was accompanied by great diminution of urinary excretion, the color of which was a dark muddy brown. He attempted to treat himself, taking at first some dilute sulphuric acid, which seemed to aggravate his condition, following this with some lithium citrate, which appeared to lighten the color of the urine, but did not increase the quantity. The patient noted concomitantly that his legs, feet and hands were swollen, and that there was puffiness of the skin of the trunk and face, particularly the left side of the face, on which he was accustomed to lie. He also noted a disagreeable stinging pain over the region of the heart. All of the symptoms tending to become continuously aggravated, he decided to obtain some assistance.

Examination of the heart showed the apex beat in the sixth interspace to the left of the nipple line. The impulse was diffuse. There was considerable tremorous epigastric pulsation. The imprint of the stethoscope left a marked ring depression. There was no audible murmur. The first sound at the apex was muffled and faint. The second sound was audible at the apex and markedly accentuated at the base, particularly in the pulmonic area. Examination of the chest showed moist râles posteriorly and anteriorly. Percussion negative. The skin was pale and edematous everywhere. The left eye was blind from glaucoma and the vision in the right was much diminished from the same disease. An iridectomy had been performed on the right eye. Blood-pressure, 1035. Examination of the urine, which was scanty, showed albumin present in slight amount and casts mostly hyaline or partly granular. Specific gravity, 1.015; color dark; sediment slight.

The patient was put to bed on a milk diet and given infusion of digitalis, ℥ii, every four hours. Immediately the symptoms amended. The urinary excretion increased in quantity to 5 or 6 pints in twenty-four hours, going down subsequently to 3 or 4. Albumin and casts diminished. The

anasarca rapidly disappeared. The orthopnea vanished, as also the retching, expectoration and precordial pain. The precordial distress kept up, however, until nitroglycerin was given, after which it immediately disappeared. The pulse frequency diminished about 10 beats per day per minute until it had come down from 130 to about 80.

But the fact which particularly attracted the patient's attention was that twenty-four hours after commencing the digitalis the nasal obstruction was relieved and in forty-eight hours it had completely disappeared.

Bulletin of American Academy of Medicine, Easton, Pa.

August, XIII, No. 4, pp. 165-268

78. Real Purpose of a Medical Practice Act. A. R. Craig, Chicago.
79. Method of Securing State Appropriations for Proper Segregation and Care of Feeble-minded. J. S. Neff, Philadelphia.
80. How Far Shall Public School System Care for Feeble-minded? A. W. Edson, New York.
81. Idem. J. H. Van Sickle, Springfield, Mass.
82. Idem. E. B. McCready, Pittsburgh.
83. Sterilization and Segregation. H. H. Goddard, Vineland, N. J.
84. Child Labor vs. Conservation of School Children. O. R. Lovejoy, New York.

New York Medical Journal

August 31, XCVI, No. 9, pp. 409-464

85. Cinematograph as Aid to Medical Education and Research. R. Matas, New Orleans.
86. *Wheat Bran. A. E. Gallant, New York.
87. *Blood Pressure in Pulmonary Tuberculosis. F. M. Pottenger, Monrovia, Cal.
88. Bubonic Plague. C. S. Braddock, New York.
89. Cutaneous Sporotrichosis. G. B. Foster and W. H. Thearle, Fort Leavenworth, Kan.
90. *Arthritis Deformans. H. M. Greene, Portland, Ore.
91. School Lunches. I. S. Wile, New York.
92. Salvarsan Therapy. H. H. Morton, New York.
93. Surgical Hemostasis. W. C. Borden, Washington, D. C.

86. Wheat Bran.—Coarse, raw bran being composed chiefly of indigestible, non-absorbable cellulose, Gallant says, takes up a large amount of water, swells and adds very materially to the débris and bulk in the intestine, thereby exciting active peristalsis, which rapidly moves the fecal column downward and outward, thereby overcoming fecal stasis, avoiding putrefaction and preventing resorption with its deadly toxemia.

When bran is ingested as a part of the daily regimen, the daily stool is made up of a soft, well formed, bulky column of feces with a notable absence of its former foul smelling effluvia. As time goes by the "liver spotted" skin clears up, dandruff and indigestion disappear, the anemia rapidly improves, the skin surface loses its dryness and becomes soft and of a healthier tint, and in some instances acne vulgaris has disappeared.

Of the methods of administering bran there is no end. In Gallant's experience the best results have been obtained by the use of coarse, unground, raw bran, stirred in a glassful of cold water and quickly gulped down, or mixed with cooked cereal, and eaten with milk and cream. Many, however, prefer to take it stirred in soup, purée, or bisque, broth or gruel. Children like it mixed with jelly, jam, marmalade, honey, maple or other syrup, and spread on bread or toast. It matters not how taken so long as it is taken and that once or twice daily. Bran taken in the form of graham bread, graham biscuits, graham pudding, graham soup, etc., if indulged in daily and in large quantities, is without doubt beneficial, and from a nutritional standpoint of value, but owing to its fineness in grinding it does not result in such bulky feces and loses much of its value in habitual constipation. When taken as raw bran the average patient requires one to two heaping tablespoonfuls daily; others do better if that quantity is increased to three or four tablespoonfuls. In some instances the laxative effect is at first quite manifest, but will subside in a day or two, or the dose may be reduced. In others it may be necessary to continue the usual cascara or phenolphthalein laxative for a few days, until the habitual stool is established, when the drug must be discontinued. Bran taken just before going to bed will induce a slight inclination very soon after rising, and should result in an action before the morning bath. If taken at breakfast, a natural though mild alarm will be felt about noon, and this warning should always be promptly obeyed or the good effect will be lost.

Among the several hundred patients whom Gallant has taught the bran habit, there have been many who suffered with chronic diarrhea, alternating diarrhea and constipation, mucous colitis, enema constipation, constipation due to the use of castor oil, the saline waters, and other drugs whose secondary effect is an astringent one and results in relative constipation. For several years it has been his habit while patients are convalescing after operation to feed them a daily quota of bran, and teach them the value of this beneficent habit.

87. Abstracted in THE JOURNAL, Aug 3, p. 396.

90. Arthritis Deformans.—Greene reports the case of a man, aged 44 years, who began three years ago to have an arthritis in the right wrist. The condition gradually extended, involving all the joints of the body. The condition was accompanied by continual pains in the joints and muscles and through the neck and chest, so that the patient was unable to obtain comfortable sleep during the night, or rest during the day. He had lost 37 pounds in weight during the three years. Three weeks ago Greene made an examination and found all the joints of the extremities greatly enlarged and partly ankylosed. The movement of the jaw was so limited that he was not able to put his false teeth into his mouth. His right wrist was almost completely ankylosed and there was marked deformity in the hand.

He drew 5 c.c. of blood from the median vein with a hypodermic syringe. The blood was placed in an incubator and allowed to remain for twenty-four hours. The serum was then poured off and plated and placed in the incubator for another twenty-four hours. A number of colonies were visible. Examination showed two distinct organisms, a bacillus which was similar to the one described by Ballantyne, Wohlmann, and Bloxall, and a diplococcus, probably the same as Boynton and Payne had isolated from the synovial membranes in chronic arthritis.

A bacterin was prepared from these organisms and treatment was instituted on March 5. After two weeks, the man was able to sleep without disturbance during the night, and says his pain has entirely left him. The right wrist, which was apparently completely ankylosed, has markedly limbered up and the swelling has disappeared. The circumference has decreased three-fourths of an inch. He is able easily to insert his false teeth into his mouth. His appetite has returned, and he gained 1 pound in weight in a week. The patient keeps steadily improving. Other patients whom Greene has under observation are also improving.

Ohio State Medical Journal, Columbus

August 15, VIII, No. 8, pp. 407-458

94. "Alimentary Respiration," etc. R. T. Woodyatt and E. A. Graham, Chicago.
95. Complications and Treatment of Face Presentations. A. J. Skeel, Cleveland.
96. Smith Operation for Extraction of Cataract. A. Timberman, Columbus.
97. Osteitis Deformans (Paget's Disease), Its Associated Mental Disturbances. C. W. Stone, Cleveland.
98. Rabies and Its Prevention. J. Mel. Phillips, Columbus.

Lancet-Clinic, Cincinnati

August 17, CVIII, No. 7, pp. 165-192

99. Work of Cincinnati Association for Welfare of Blind and Its Attitude Toward Prevention of Blindness from Venereal Disease. L. Stricker, Cincinnati.
100. What Must Medical Examiner Do to Protect Interests of His Company, and How Does He Do It? W. S. Kendrick, Atlanta, Ga.
101. Ice Tongs Extension for Simple Fracture of Femur. J. Ransohoff, Cincinnati.
102. Value of Didactic Teaching. R. L. Thomas, Cincinnati.

August 24, CVIII, No. 8, pp. 193-220

103. Skin Tension and Air Bathing. P. W. Goldsbury, Warwick, Mass.
104. *Cardiac Syphilis with Special Reference to Aortic Aneurysm and Regurgitation, and Value of Wassermann Reaction in Determining Their Etiology and Treatment. R. H. Babcock, Chicago.
105. *Contraction of Catgut and Theory of Musculur Contraction. W. H. Strietman and M. H. Fischer, Cincinnati.

104. Cardiac Syphilis.—The purpose of Babcock's paper is to emphasize the etiologic importance of lues in mesaortitis and its two sequels, aortic regurgitation and aortic aneurysm. He says that one who is not doing special work along this line can hardly appreciate the great frequency of what is

known as the vascular type of aortic insufficiency. Its clinical findings are not essentially different from those of the rheumatic form, and its clinical recognition rests mainly on the age of the individual, the entire absence of a history of articular rhematism or other acute infection likely to be followed by endocarditis, the stiffness perhaps of the accessible arteries and often a less pronounced degree of left ventricle hypertrophy as shown by the breadth and force of the apex beat. Not infrequently there is history of the accidental discovery of a cardiac murmur or of the onset of cardiac symptoms without any previous illness that could have in any way led to inflammation of the valves. The patient is generally at or past middle age and is more often a male, although this type of the disease may be met with in women of the same age. Whenever, therefore, such an adult presents himself with signs of aortic leakage and close inquiry fails to elicit a history of articular rheumatism in earlier years or of attacks of tonsillitis, Babcock at once suspects syphilis. In such cases when possible, and in persons in whom history of luetic infection is possible but not definite, he advises a Wassermann test and rarely fails to obtain consent after having explained the advantages therapeutically, at least, of knowning what the reaction is.

Of sixteen cases of aortic regurgitation of the vascular type, eleven were submitted to the Wassermann test with a positive reaction in all. Of the remaining five a history of chancre was admitted in four, while one was not questioned in regard to the possibility of lues and did not take a Wassermann. Fifteen of the sixteen cases accordingly could be attributed to syphilis, a percentage of 93.7. During the same period of time Babcock has seen ten cases of aortic aneurysm, the diagnosis in all being made by classical physical signs and confirmed by the skiagraph, in those giving rise to any doubt concerning the accuracy of diagnosis. Of these ten patients, five gave a positive Wassermann reaction, two admitted syphilis, two gave no history and were not submitted to a Wassermann, while one gave a negative reaction. In other words, in seven out of ten cases, syphilis was clearly the etiologic factor (70 per cent.).

105. **Contraction of Catgut.**—This paper attempts to contribute to the establishment of a colloid chemical theory of contraction in striated muscle. A series of experiments on the swelling and contraction of catgut is described, and it is pointed out how these phenomena are not only identical with the physical phenomena of contraction as observed in striated muscle, but how the chemical conditions determining both are also identical. A review is given of the work of those men who have contributed most to the establishment of a colloid chemical theory of contraction, and to this are appended some critical remarks.

West Virginia Medical Journal, Wheeling

August, VII, No. 2, pp. 35-70

106. Etiology, Pathology and Treatment of Rheumatism and Allied Conditions. W. J. Judy, Webster Springs.
107. Medical Legislation in West Virginia. G. D. Lind, Greenwood.
108. Prolonged Pregnancy. A. H. Wright, Toronto.
109. Prophylaxis in Aural Diseases and Their Complications. S. M. Smith, Philadelphia.

Journal-Lancet, Minneapolis

August 15, XXXII, No. 16, pp. 423-450

110. Short Visit to Some Hospitals in Germany, Austria, Switzerland and Holland. W. J. Mayo, Rochester, Minn.
111. Case of Osteitis Fibrosa Cystica. H. J. G. Koobs, Scotland, S. D.
112. Puerperal Infection. C. E. Spicer, Litchville, N. D.
113. Tuberculosis Among American Indians. F. H. Creamer, Dupree, S. D.
114. Conservation of Health. W. C. Chambers, Blue Earth, Minn.

Journal of Indiana State Medical Association, Fort Wayne

August 15, V, No. 8, pp. 335-366

115. Flat-Foot. B. P. Weaver, Ft. Wayne.
116. Value of Cystoscopy in Diagnosis of Hematuria. H. L. Kretschmer, Chicago.
117. Case of Probable Acute Poliomyelitis. C. C. DuBois, Warsaw.
118. Treatment of Raynaud's Disease by Hyperemia. B. V. Caffee, Terre Haute.

Virginia Medical Semi-Monthly, Richmond

August 23, XVII, No. 10, pp. 237-260

119. Vital Statistics. C. P. Wertenbaker, Norfolk.
120. Rôle of Psychotherapy in Pellagra. G. M. Niles, Atlanta, Ga.
121. Operations for Harelip and Cleft Palate. J. S. Horsley, Richmond.
122. Treatment of Syphilis. H. H. Hazen, Washington, D. C.
123. Physician and Lawyer. H. J. Booth, Columbus, O.
124. Sociologic Factor in Medical Progress. W. M. Barton, Washington, D. C.

Colorado Medicine, Denver

August, IX, No. 8, pp. 221-248

125. Headache as a Symptom: Its Mechanism and Significance. E. Jackson, Denver.
126. Necessity of Knowledge of Psychology in Practice of Medicine. E. J. A. Rogers, Denver.
127. Importance of Accurate Refraction. W. H. Crisp, Denver.
128. Have We a Specific for Epidemic Cerebrospinal Meningitis? J. W. Amesse, Denver.
129. Heat and Its Use in Pelvic Inflammation. D. S. Elder, Denver.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

Annals of Tropical Medicine and Parasitology, London

July VI, No. 2, pp. 131-300

1 Measurement of Trypanosoma Rhodesiense. J. W. W. Stephens and H. B. Fantham.
2 Microsporidiosis, a Protozoal Disease of Bees due to Nosema Apis, and Popularly Known as Isle of Wight Disease. H. B. Fantham and A. Porter.
3 Morphology and Life History of Nosema Apis and Significance of Its Various Stages in So-Called "Isle of Wight" Disease in Bees (Microsporidiosis). H. B. Fantham and A. Porter.
4 Dissemination of Nosema Apis. H. B. Fantham and A. Porter.
5 *Variations in Number of Leukocytes and Crescents in Malaria. D. Thomson.
6 *Destruction of Crescents: Conclusions Regarding Prevention of Malaria by Administration of Quinin. D. Thomson.
7 Hemolysis in Malarial Fever. G. C. Simpson.
8 Anti-Neuritic Bases of Vegetable Origin in Relationship to Beriberi, with Method of Isolation of Torulin, Antineuritic Base of Yeast. E. S. Edie, W. H. Evans, B. Moore, G. C. Simpson and A. Webster.
9 Morphology and Biology of Prowazekia Urinaria (Bodo Urinarius, Hassall). J. A. Sinton.
10 Transmission of Human Trypanosomes by Glossina Morsitans. A. Kinghorn and W. Yorke.
11 Measurements of a Thousand Examples of a Short Form of Trypanosome from a Double Infection. B. Blacklock.
12 Leishmaniasis and Babesiasis in Yucatan. H. Seidelin.

5. **Number of Leukocytes and Crescents in Malaria.**—In order to support his belief that a large number of malarial parasites on sporulating cause a leukopenia, whereas a small number on sporulating cause a leukocytosis, Thomson has tried the effect of hypodermic injections of dead malarial parasites on the leukocytes on twelve occasions. Having ascertained the number of parasites per c.mm. of blood in a case of malaria during a paroxysm, he drew off several cubic centimeters of blood from a vein into an equal volume of citrate solution in a sterile syringe. This was transferred to a sterile vessel and phenol added so as to make a 1 per cent. strength. This was left in the cold for a few days, so as to ensure the death of the parasites. By injecting hypodermically a given volume of this material into a person, one was able to watch the effect on the leukocytes of a given number of dead parasites. A leukocyte count was made immediately before the injection, and two to three more counts made at half-hour intervals afterward.

In three of these twelve experiments Thomson injected three, four and five millions of malignant tertian parasites, respectively, and got a slight increase in the number of leukocytes in one-half to one hour afterward. In three more he injected doses of thirty to forty millions, and obtained a slight decrease in the number of leukocytes. On five occasions he injected from ten to twenty millions, and obtained a marked increase of leukocytes in three of these in one-half to one hour after the injection. The remaining experiment was an injection of five million benign tertian parasites, taken during a rigor. This resulted in a slight increase of leukocytes in half an hour. It would therefore appear that it requires an injection of ten to twenty million malignant tertian parasites to cause a leukocytosis, whereas numbers from thirty to forty million and upward cause a leukopenic effect (as in a malarial paroxysm). On one occasion the latter number caused a slight rigor, but no increase of temperature.

6. **Destruction of Crescents.**—The "Ideal Method A" proposed by Thomson is that every adult person in the population (children in proportion according to age) should take twenty grains of quinin daily and simultaneously for a period of three weeks, quarterly, i. e., four times a year. This amounts to 1,680 grains per adult per annum, if well during the year, and probably 1,800 grains, if ill at some period in the year. The administration of quinin in doses of 20 grains daily for three weeks is almost certain to destroy both the asexual and sexual parasites. After this period, the person will be non-infective to mosquitoes, and freed from a tendency to relapse, four times a year. Infective mosquitoes must necessarily become much fewer in number. The amount of quinin taken is less in the end, and none is taken during nine months of the year. After the third day the majority of people feel very little inconvenience when taking 20 grains of quinin daily. Thomson has satisfied himself on this point over and over again with regard to adult males, while in hospital and doing light indoor work.

As an alternative to the above, Thomson puts forward "Ideal Method B," which embodies the same scientific principles as "A," but which is more scientific and less tyrannical in its administration. This method B differes from A in that a quarterly census of the blood of the population would be taken before administering the quarterly quinin. Only those who had parasites in their blood would require to take the three weeks' course, and those with crescents would, if possible, be isolated in mosquito-proof hospitals till non-infective. Further, immigrants would not be allowed to enter the area until their blood had been examined and pronounced non-infective. Infective immigrants would require the three weeks' period of treatment, with isolation, before being admitted to the population.

British Medical Journal, London

August 17, II, No. 2694, pp. 345-404

13 Spinal Anesthesia by Stovain. F. C. Madden.
14 Complications Following Administration of Hedronal. R. A. Veale.
15 Congenital Syphilitic Deafness Treated by Salvarsan. G. N. Biggs.
16 Local Application of Salvarsan in Chronic Superficial Glossitis. A. Allport.
17 *Acute Formaldehyd Poisoning. J. Watt.
18 Scheme for Medical Benefit. L. J. Picton.
19 Reform of Hospital Out-Patient Departments. A. S. Parkinson.
20 Children and Dental Diseases. R. J. E. Young and J. S. Wallace.
21 Isolation in Scarlet Fever. C. H. Phillips.
22 Visual Defects in Children. A. A. Bradburne.
23 Administrative Measures Consequent on Compulsory Notification of Phthisis. J. C. McVail and J. Niven.
24 Effects of Intra Migration on National Health. J. S. Mackintosh.
25 Chemical Effects Produced by Radiations from Active Matter. E. Rutherford.
26 Action of Radium and Roentgen Rays on Malignant Growths. E. H. Shaw and N. S. Finzi.
27 Causes of Failure of Roentgen-Ray Treatment in Deep-Seated Cancer. F. Hernaman-Johnson.
28 Standardization of Radium Dosage. E. H. Howlett.
29 Therapy of Radio-Oxygen Bath. W. Armstrong.

17. **Acute Formaldehyd Poisoning.**—Death in Watt's case was due to swallowing a quantity, not exceeding 1 ounce, of commercial formalin. There seems to have been considerable variation in the symptoms, due probably in part to the dosage in other cited cases. Here the points of interest are the tendency to vertigo, the unconsciousness, and the greater implication of the respiratory than the circulatory system, all of which occur in most of the cases quoted. The predominance of cerebral symptoms, leading to early death, gave little opportunity for the development of signs of irritation of the kidneys and the alimentary canal, apart from the intense pain in the latter and the initial vomiting. This case confirms the deduction to be drawn from the others that formaldehyd is really a potent poison, probably differing little in degree of toxicity from phenol.

Lancet, London

August 17, II, No. 4642, pp. 425-494

30 Importance of Early Functional Treatment in Cases of Contusions and Sprains of Back. F. Shufflebotham.
31 Epithelial Grafting as Means of Effecting Sure and Rapid Healing of Cavity Left by Complete Mastoid Operation. C. A. Ballance.
32 *Operative Treatment (Lane) of Simple Fracture of Long Bones in Children. H. H. Sampson.
33 *New Method of Demonstrating Presence of Bacillus Coli in Sewage-Polluted Water. G. C. Purvis.
34 *Etiology of Appendicitis as Result of Blood Infection, With Particular Reference to Tonsils as Primary Seat of Infection. F. J. Poynton.

32. **Simple Fracture of Long Bones in Children.**—Of simple fracture, forty-six cases have been subjected to reexamination by Sampson; of these cases forty-two had been treated by open operation. Thirty-four cases of recent fracture submitted to open operation give—thirty perfect anatomic and functional results; three perfect functional, yet imperfect anatomic results; one imperfect anatomic and functional result. Seven cases of malunited fracture submitted to open operation give—three perfect anatomic and functional results; one perfect functional but imperfect anatomic result; three imperfect anatomic and functional results. One case of ununited fracture submitted to open operation gives—one imperfect anatomic and functional result. Four of the imperfect cases have such slight defects that function is in no way impaired. Whereas recent fractures give perfect results in over 88 per cent. of the cases, malunited and ununited fractures give a perfect result in only 37 per cent.

This, Sampson regards as being a strong argument in favor of the adoption of early operative measures as a routine procedure, because if resorted to after malunion has taken place, the chances of a perfect result being obtained are greatly diminished. Perfect function is present in 97 per cent. of recent fractures and in 50 per cent. of malunited and ununited fractures. Sixty patients have been treated by the application of metal plates; thirty-five of these patients have been reexamined. Out of thirty-one recent cases, twenty-seven show perfect results, three show perfect functional results, and one has slight impairment of supination of the forearm and has been classed as an imperfect result. Three malunited cases show a perfect result in two instances and a perfect functional result in the third. One ununited case shows a very unsatisfactory result, but no screws could be used, and an attempt was made to fix the plate by means of catgut. The plate was subsequently removed from the last case after a period of three months. The plate was also removed from one other case two and a half months after the operation. In one case the plate was broken while the patient was being taken to the Roentgen-ray room; this fracture was replated a week later. In two cases of malunited fracture of the femur the original plates were removed and fresh ones applied when the deformity had been more fully corrected. With the exception of the ununited fracture the plates were found to be firmly fixed in every instance, and it was necessary to unscrew in order to remove them.

After a sojourn of some months in the tissues a steel plate becomes discolored from oxidation, but no corrosion takes place. On those occasions when, after a considerable lapse of time, it was found necessary to remove the plate, the latter was found in every case to be firmly embedded in the bone.

It has been stated that rarefying osteitis occurs around the screws, so that in time they become quite loose. Rarefying osteitis has never been seen in any case of Mr. Lane's at the hospital for sick children. It has been mentioned that lengthening of the limb occurs in a number of cases after a plate has been applied. Slight lengthening was found at the reexamination of the majority of cases of fracture of the shaft of the tibia and several cases of fractured femur. This lengthening was found at varying periods after the operation, and was just as frequent at the end of a few months as after the lapse of several years. The age of the child does not seem to have any influence. It is difficult to see how the plate when situated on the shaft of a bone could affect its growth. It seems probable that the lengthening in these cases has either been present since the operation, and corresponds to the space intervening between the ends of the fragments, or has occurred during the postoperative immobilization. The lengthening is more noticable in the tibia, because that bone lends itself to such accurate measurement.

33. **Bacillus Coli in Sewage-Polluted Water.**—Purvis' method consists in adding salicylate of soda (in 1 per cent.

strength) to the nutrient medium, e. g., agar, and "plating" in the usual way in Petri dishes, then exposing the plates (after the medium has set) to the air for such time as may be deemed necessary. Take 100 c.c. of ordinary nutrient agar; this will require 1 gm. of salicylate of soda, which will give 20 tubes for plating, each tube containing 5 c.c., or 14 tubes each containing 7 c.c. and a little to spare. It will be found on exposing the plates, or a single plate, to the air and incubating at 37 C. that no bacterial colonies will have appeared, but only molds and torulae. If nutrient gelatin be used for "plating," then the incubation will have to be carried out at a lower temperature (22 C.), which is a better temperature for molds, but gelatin is unsuitable as a medium in the tropics, or even in subtropical climates.

The Method of Demonstrating Bacillus coli in Polluted Water.—To 100 c.c. of double strength nutrient broth (10 Eyre) there is added 1 gram of salicylate of soda; the broth is then put into tubes (varying in size) from 25 c.c. to 1 c.c. in each tube, and all the tubes are sterilized in the usual way and allowed to cool; to each tube is then added a quantity of the suspected water equal in volume to the broth contained in it, and the tubes (which now contain salicylate of soda equivalent to 0.5 per cent.) are incubated for from twenty-four to forty-eight hours, at a temperature of 42 C. If turbidity of the broth results *B. coli* may be suspected and its identity will have to be proved by microscopic examination and by biochemical (e. g., sugar fermentation) tests. The only bacillus which is likely to grow along with coli is subtilis and they can be separated from each other, if necessary, by "plating." If incubation of the tubes be carried out at a lower temperature (37 C.), which Purv's does not recommend, then *Bacillus proteus* (proteus vulgaris) is also likely to grow far more vigorously than either subtilis or coli. *Bacillus typhosus* (laboratory cultures) is completely inhibited by 0.25 per cent. of sodium salicylate and even by 0.2 per cent., and does not grow particularly well even in a 0.1 per cent. salicylate medium.

34. **Bacterial Origin of Appendicitis.**—A girl, aged 15 years, was suffering from a first attack of appendicitis. The illness was a very definite, but not unusually severe one, and the diagnosis was particularly easy because in addition to the ordinary signs of the disease the enlarged and tender appendix could be easily felt through the abdominal wall. The duration of the attack was forty-eight hours. The right tonsil was inflamed, and in some of the crypts a follicular deposit was evident. No complaint of a sore throat had been made by the patient, who was no doubt suffering far more from abdominal pain. A large and swollen appendix covered with fibrinoplastic exudation was removed. There was neither gangrene nor perforation, and there was no concretion. The patient made an uninterrupted recovery. There was no previous history of any serious illness.

While under the anesthetic a culture was taken from the right tonsil, and the appendix was placed in a sterile tube. (a) The bouillon culture from the throat showed mainly strepto-diplococci, but also a few staphylococci and an occasional bacillus. There was no difficulty in isolating the diplococcus from the culture. (b) Cultures from the appendix made by smearing the exudate on agar showed mainly the *Bacillus coli*, but also some colonies of strepto-diplococci. (c) Cultures from the sanious fluid which had exuded from the appendix after it had remained a few hours in the sterile tube at room temperature, and which had been then withdrawn and incubated in a Pasteur pipette, gave a pure culture of strepto-diplococci. (d) Some of the sanious fluid inoculated on agar and into bouillon showed strepto-diplococci, but a predominance of the *Bacillus coli*. The diplococci from the throat and from the sanious fluid appeared morphologically and in cultural characters identical.

Experimental Results With the Culture From the Throat.—The diplococcus produced arthritis with the usual accompanying symptoms in the rabbits intravenously inoculated and was again recovered in pure culture from the arthritis exudations. These investigations are being continued.

Experimental Results With Cultures From the Sanious Fluid.—Two groups of investigations were made: 1. Six adult rabbits were inoculated intravenously with subcultures in bouillon with negative result. This loss of virulence in bouillon is a frequent event in the cultivation of micrococci of the streptococcal group. 2. Six young rabbits of six weeks of age were inoculated from subcultures on blood-agar. Of these animals the first suffered from malaise and diarrhea for three days and on the fourth developed arthritis of the right shoulder-joint. It was killed on the eighth day. The diplococcus was recovered from the inflamed joint. The spleen was small and the other organs were healthy. The second animal developed arthritis of both knee joints on the third day with fever and malaise. It was killed on the fifth day. The post-mortem examination showed arthritis and appendicitis. The appendix showed the middle third as the injured part, and there were necrotic areas in the deeper layers of the wall of the appendix. The diplococcus was recovered in pure culture from the joints. The third rabbit developed arthritis of the left knee-joint on the third day and was killed on the fifth; save for the arthritis it was apparently healthy. The fourth rabbit, after transient malaise, recovered without any local lesion. The fifth rabbit developed arthritis of the right knee-joint on the third day. The sixth rabbit developed multiple arthritis and was killed on the fifth day. Thus five out of the six rabbits developed arthritis and one of these in addition appendicitis.

Sections of the appendix showed an acute diffuse change mainly affecting the submucous and mucous coats and the serous covering of the bowel. The submucous and mucous coats were in a state of acute necrosis, the result of minute hemorrhages from and thrombosis of the vessels in the submucosa. A fibrino-cellular exudation infiltrated the submucous coat, in which the lymphoid tissue was almost completely destroyed. The mucous membrane was infiltrated with inflammatory cells, and there was almost complete destruction of its epithelial covering and of Lieberkuhn's follicles, only a slight trace of the deeper crypts being visible. The muscular coat was also infiltrated with inflammatory cells, and the greatly swollen serous layer was edematous and infiltrated with fibrino-cellular exudation. Diplococci were demonstrated in the submucous and mucous membranes, but were most numerous and easily demonstrated in the serous membrane. The *Bacillus coli* had invaded the necrotic tissue and serous covering of the bowel.

Australasian Medical Gazette, Sydney

June 22, XXXI, No. 25, pp. 649-672

35 Actinomycosis. F. W. West.
36 Anaphylaxis. A. P. Gillespie.
37 Snow Blindness in Australian Alps. H. F. Shorney.
38 Case of Acute Atrophy of Liver. H. J. Clayton.

June 29, XXXI, No. 26, pp. 673-692

39 Knee-Joint Problems. R. H. Russell.
40 Gastroenteritis. L. E. Ellis.
41 Stone in Ureter. A. J. Park.
42 Naso-Pharyngeal Fibroma. F. Tratman.

July 6, XXXII, No. 1, pp. 1-24

43 Color-Sense in Relation to Emotions. G. H. Taylor.
44 Three Cases of Ectopic Gestation. R. G. Scott.
45 Complete Inversion of Uterus. F. Pain.
46 Case of Trephining in Epilepsy. R. M. Curtis.

July 13, XXXII, No. 2, pp. 25-52

47 Infantile Mortality. F. S. Home.
48 Case of Malignant Endocarditis. P. E. W. Smith.
49 Case of Double Ectopic Gestation. L. B. Lancaster and G. Moncrieff.

July 20, XXXII, No. 3, pp. 53-80

50 Two Hundred Consecutive Celiotomies. A. J. Nyulasy.
51 Rapid Labor in Albuminuria. G. H. Selwood.
52 Bilateral Tubal Pregnancy. R. Worrall.
53 Hemorrhage from a Corpus Luteum Cyst. F. Adams.
54 Unusual Absence of Menstruation. L. M. McKillopp.

Dublin Journal of Medical Science

August, III, No. 488, pp. 81-160

55 Daniel John Cunningham. J. Little.
56 *Pericardial Effusion. W. Boxwell.
57 Case of Henoch's Purpura: With Symptoms and Treatment of Disease. M. S. Moore.
58 Clinical Report of Rotunda Hospital for One Year, Nov. 7, 1910, to Oct. 31, 1911. H. Jellett, B. A. H. Solomons and D. G. Madill.
59 Pathologic Report of Rotunda Hospital for One Year, Nov. 7, 1910, to Oct. 31, 1911. R. J. Rowlette.

56. **Pericardial Effusion.**—Boxwell maintains that a pericardial effusion requiring any surgical interference at all ought to be treated by resection of a rib cartilage, and free opening of the sac, just as one would open the dura mater to drain a cerebral abscess. It is the only safe and satisfactory method, and the very presence of a large effusion makes the operation easier than it would be found in a normal subject. This is the line of treatment universally advocated for effusions previously ascertained by puncture to be purulent. Boxwell's point is that free opening should be the exploratory, and at the same time the curative, operation for all cases of large effusion, be the character of the effusion what it may. A short account of two cases, with allusions to two more, illustrate his reasons for adopting this surgical attitude.

Archives des Maladies du Cœur, etc. Paris

April, V, No. 4, pp. 225-304

60 The Blood Pressure During Digestion. (La tension artérielle pendant la digestion.) M. Loeper.
61 Alternating Pulse After an Extra Systole. (Du rythme alternant post-extrasystolique. Sa Valeur pronostique.) J. Heitz.
62 Case of Aleukemic Chloromatous Macrolymphocytomatosis. (Etude clinique, hématologique et anatomique d'un cas de chlorome atypique.) Pissavy and C. Richet, Jr.

Archiv für Gynaekologie, Berlin

XCVII, No. 2, pp. 185-328. Last Indexed July 20, p. 230

63 *Importance of the Loss of Blood with Gynecologic Operations. (Bedeutung des Blutverlustes bei gynäkologischen Operationen.) F. Weitzel.
64 Connection Between Hypophysis Cerebri and the Genital Organs. (Beziehungen zwischen Hypophysis und Genitale.) B. Aschner.
65 Rupture of Old Cesarean Section Cicatrix. (Uterusruptur in der alten Kaiserschnittnarbe.) R. Jolly.
66 Sarcomatous Degeneration of Uterine Myoma. (Zur Frage der sarkomatösen Entartung der Gebärmuttermyome und des Zusammentreffens mit dem Corpuscarcinom, nebst Beschreibung eines Falles von Carcinosarkom des Uterus.) P. von Kubinyi.
67 Corkscrew Treatment of Obstetric Indentation of the Skull. (Zur chirurgischen Behandlung der Schädelimpressionen bei Neugeborenen.) T. Sol.
68 *Sarcomatous Degeneration of Uterine Myomas; Seven Cases. (Häufigkeit sarkomatöser Veränderungen in Myomen.) Warnekros.
69 Suture of the Levator Ani. (Zur Anatomie und Technik der Levator-Fasciennaht.) E. Martin.

63. **Importance of Loss of Blood in Operations.**—Weitzel expatiates on the great importance of the loss of much blood in gynecologic operations on debilitated patients. By soaking all the cloths, sheets, sponges, etc., used in an operation and comparing the hemoglobin percentage of the water with the percentage of the patient's blood taken before and after the operation, it is possible to estimate the amount of blood she has lost. (Rübsamen is said to be the pioneer in this line; his work was summarized in THE JOURNAL, Feb. 10, 1912, p. 446.) Weitzel has applied the method in forty-one cases recently and tabulates the findings. They show that the nearer a vaginal operation to the menstrual period, the larger the loss of blood, as also in women farther from the menopause. During a pregnancy the hyperemia in the pelvic organs is most intense. The loss of blood in removing an ovarian tumor does not seem to be influenced by the size of the tumor; the technic in regard to the vessels is the same for all sizes. The loss of blood increases proportional to the vascularization of the peritonitic adhesions. With abdominal operations, parenchymatous hemorrhage over a large area seldom occurs, such as may be unavoidable with a vaginal operation. The blood-pressure does not seem to influence the hemorrhage at a laparotomy. A stout woman with uterine cancer generally loses more blood than a thin patient during a Freund-Wertheim operation, and the great loss of blood renders the prognosis graver. One cachectic woman succumbed to loss of 1,669 c.c. of blood during this operation, while a vigorous woman suffered no serious inconvenience from loss of 1,988 c.c.

68. **Sarcomatous Degeneration of Myomas.**—Warnekros found microscopic evidence of sarcomatous degeneration in seven of his last series of seventy-eight cases of uterine myoma; that is, in 10 per cent. He thinks that this finding is an argument against roentgenotherapy of myomas, as the seven women would probably all have been lost if the uterus had not been promptly removed. In two other cases there was malignant recurrence in six months after removal of uterine myomas in which even the microscope failed to show any cancerous tendency. Bumm has reported four cases of sarcoma recurrence in a series of 200 operative myoma cases. Warnekros urges total hysterectomy for all myomas the least suspicious of cancer. A patient recently returned with symptoms two and a half years after supravaginal amputation for myoma, and a pedunculated sarcoma was found on the stump of the cervix.

Jahrbuch für Kinderheilkunde, Berlin

July, LXXVI, No. 1, pp. 1-124

70 *Microscopic Findings in Two Cases of Congenital Spastic Paralysis. (Zur pathologischen Anatomie der zerebralen Diplegia im Kindesalter.) S. Miura.
71 Osteopsathyrosis. L. Scholz.
72 Defective Bone Growth. (Zur Kenntnis der Osteogenesis imperfecta—Vrolik.) R. Preiswerk.
73 Six Cases of Progressive Familial Amaurotic Idiocy in Children. H. Kowarski.

Supplementary Number, pp. 1-222

74 Scarlet Fever. Incubation; Relapses; Traumatic Origin, Etc. (Weitere Fragen im Scharlachproblem.) F. von Szontagh.
75 Metabolism in Normal Boys. (Zur Physiologie des Stoffwechsels im Knabenalter mit bes. Berücksichtigung einiger Mineralstoffe.) O. Herbst.
76 Fifty Cases of Direct Laryngoscopy and Tracheobronchoscopy in Children. M. Paunz.
77 *Efficacy of Antitoxin in Diphtheria Affecting the Nervous System. (Wirksamkeit des Diphtherieserums bei Beteiligung des Nervensystems bei der Erkrankung.) H. Kleinschmidt.
78 *Participation of the Adrenals in Acute Infectious Diseases. (Zur Frage der Rolle der Nebennieren in der Pathologie und Therapie der Diphtherie und anderen Infektionskrankheiten.) W. Moltschanoff.

70. **Congenital Spastic Paralysis.**—Miura calls attention to hip-joint disease in the two cases he reports. He is convinced that this is more than a mere coincidence. The special feature of the microscopic findings in both cases was the primary developmental defect in the cells of the motor zone in the brain, a hypoplasia of the ganglion cells. The pyramidal tracts were apparently intact in the second case.

77. **Important Effect of Diphtheria Antitoxin on the Nervous System in Diphtheria.**—Kleinschmidt speaks of the well known affinity of the diphtheria toxin for the nervous system, and discusses the action of antitoxin in the cases in which the nervous system has been affected. He performed laboratory experiments with guinea-pigs' brains and concluded from the results observed that there can be no question that the antitoxin does actually neutralize the toxin that has already entered into combination with the nerve cells. This action, however, grows less the longer the interval since the infection. This teaches that diphtheria antitoxin should be injected early in such quantities and in such a manner as to bring the excess of antitoxin into direct contact with the nerve cells affected. Doses as high as 10,000 units three or four times a day should be given. The intravenous or lumbar spinal method is best. To avoid anaphylactic reactions, the serum should be injected slowly, and Neufeld advises subcutaneous injection of a small dose before each intravenous injection. Nartowski and F. Meyer, from their clinical experience, have come to the same conclusions. H. Meyer and Ransom disagree with these conclusions, but Babonneix performed similar experiments with like results. Kleinschmidt gives tables showing in detail the findings in his experiments. They testify anew to the fact that diphtheria toxin taken up recently by the brain cells can be drawn out of them by antitoxin and by this alone. Of course this can be effectually done only when antitoxin is present in amounts sufficient to do the work properly. The aim should be to inject the antitoxin immediately and in sufficient amounts to ensure intimate contact between the antitoxin and the nerve cells.

78. **The Part Played by the Adrenals in Acute Infectious Diseases.**—Moltschanoff made post mortem examination of the adrenal glands in forty-two children, including twenty-nine cases of diphtheria and six of scarlet fever. He also performed a series of experiments on guinea-pigs, injecting them with diphtheria toxin and epinephrin. He describes the findings in detail, all testifying to the important share of the adrenals, especially in diphtheria, their rôle in this disease being a very complex one; they help to protect the organism against the diphtheria poison, but just how is not known. At

first their functional activity is increased, but this soon exhausts the adrenal cells and atrophy follows. The resulting acute functional insufficiency of the adrenals causes serious symptoms and sometimes the patients die from this alone. Epinephrin at this stage supplies the lacking internal secretion of the adrenals, and thus is a very effectual means for restoring the tone of the cardiovascular system. He urges that it should be more extensively used in diphtheria and especially early in the disease as a prophylactic measure before the heart weakness manifests itself.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

July, XXXVI, No. 1, pp. 1-140

79 Course of Pregnancy and Childbirth After Extraperitoneal Cesarean Section; Two Cases. (Zur Frage über den Verlauf der Schwangerschaft und Geburt nach extraperitonealem Kaiserschnitt, nebst einigen Bemerkungen zur Sterilisation der Frau.) L. G. Litschkuss.
80 Artificial Premature Delivery with Contracted Pelvis. (Ueber künstliche Frühgeburt bei Beckenenge.) V. Bagger-Jörgensen.
81 Vaginal Cesarean Section for Rapid Termination of Delivery or Pregnancy. (Die vaginale Sectio caesarea zur raschen Beendigung der Geburt oder Unterbrechung der Schwangerschaft.) S. S. Cholmogoroff
82 *Periodical Pains in Women. (Ueber periodische Schmerzen bei Frauen. Simpsonsche Schmerzen.) G. Snegireff.
83 Technic for Gynecologic Roentgenotherapy. (Zur Technik der gyn. Roentgenbestrahlungen.) Albers-Schönberg.
84 Mixed Anesthesia in Gynecology. (Ueber Versuche mit neuen Narkose-Arten in der Gynäkologie.) H. Schlimpert.

82. **Diagnostic Significance of Recurring Intermittent Pains in Women.**—Snegireff reviews the features which distinguish the daily intermittent paroxysms of pain liable to accompany cancer of the body of the uterus. Retained fluids, a calcified myoma or a cancer may all act as a foreign body in the uterus and induce paroxysms of pain of a periodical character. When the pain is due to an inflammatory process it generally begins with an acute onset and then gradually declines, while in the other cases the pain gradually climbs up to its acme. The inflammatory pains are also accompanied by fever, chilliness and sweats, lacking in the other cases, and application of cold relieves the inflammation pain while cold aggravates the pain with cancer and only heat relieves. With the inflammatory pains, further, the amount of vaginal discharge has no influence on the pain and more or less painfulness persists between the paroxysms. With these typical intermittent pains of cancer the intervals are free from pain and the recurrences are more regular. He reports the case of a woman of 47 who noted these recurring paroxysms of pain after riding in the street cars; the paroxysms lasted an hour or so and then subsided spontaneously. After four months they increased in intensity and duration and occurred daily and finally both day and night; they were always most severe during the menstrual periods. By the seventh month she began to lose weight and in another month or so to vomit. A gynecologist then consulted diagnosed hemorrhagic endometritis and a tumor in the uterus which proved inoperable cancer. The patient had noticed by the fourth month an odorless, reddish vaginal discharge every evening about 6, and that this discharge was most abundant on the days free from pain and scanty on the days with paroxysms. The retention of this discharge explained the pains and their periodicity. In another case similar intermittent pains were caused by an ordinary uterine fibromyoma as a foreign body which the uterus was trying to expel. In conclusion a case is reported in which both forms of intermittent pains were combined, the patient having a fibrous polyp and bilateral pyosalpingitis.

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

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85 Nervous and Mental Disturbances Connected with Child-Bearing. (Ueber Generationspsychosen und den Einfluss der Generationsperiode auf schon bestehende psychische und neurologische Krankheiten.) J. L. B. Engelhard.
86 Electric Irritability of the Uterus Musculature. (Experimentelle Untersuchungen über die elektrische Reizbarkeit der Uterusmuskulatur.) W. Rübsamen and J. Burakoff.
87 Rupture of Old Cesarean Section Scar. (Ruptur des graviden Uterus in einer alten Kaiserschnittnarbe.) O. Fischer.
88 Etiology of Pyosalpinx. T. Heynemann.
89 Purulent Meningitis in a New-Born Child. (Fall von Meningitis purulenta beim Neugeborenen infolge rechtseitiger eitriger Mittelohrentzündung.) H. Bonhoff and P. Esch.
90 Adenomyoma in a Laparotomy Scar. (Ein Adenomyom in einer Laparotomienarbe nebst Bemerkungen zur Genese dieser Geschwulstbildung.) R. Klages.

Brazil-Medico, Rio de Janeiro

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91 Abscess in the Spleen. (Abcesso do baço.) F. Luz.
92 Coffee and Alcoholism in Russia. A. B. de Mello.

July 1, No. 25, pp. 251-260

93 The Brazilian Electric and the Reflex Method of Treating Aneurysm of the Aorta. (Valor da reflexo-therapia applicada ao tratamento dos aneurismas da aorta.) A. de Freitas.

Revista de Medicina y Cirugia, Havana

July 25, XVI, No. 14, pp. 391-416

94 Hygiene of the Streets. (Peligros higienicos en las calles.) L. M. Cowley.
95 Science and Superstition. H. R. Perez-Vento.

Semana Medica, Buenos Aires

June 20, XIX, No. 25, pp. 1137-1184

96 The Proteids of Normal Blood Serum and Its Refractometric Index. C. B. Udaondo.
97 Dislocation of the Clavicle. (Luxaciones de la clavicula.) L. Bard.

Bulletin de l'Académie de Médecine, Paris

July 2, LXXVI, No. 27, pp. 1-16

98 *Wine, Cider and Gout. Motais.

July 9, No. 28, pp. 17-52

99 Culture of the Spinal Ganglia of Mammalia in Vitro by Carrel's Method. G. Marinesco.

July 16, No. 29, pp. 53-75

100 *Cholesterin Content of Syphilitic Blood Serum. E. Gaucher, Paris and Desmoulière.

July 23, No. 30, pp. 76-113

101 *Growth and Degeneration of Nerves in Vitro. G. Marinesco and J. Minea.
102 *Parameningococcic Meningitis. (Méningite à paraméningocoques, traitée et guérie par le sérum antiparaméningococcique. Inefficacité du sérum antiméningococcique.) F. Widal and Weissenbach.
103 Confinement to Bed as Therapeutic Measure in Mental Disease. (De l'alitement—Clinothérapie—dans le service central d' admission des aliénés de la Ville de Paris et du département de la Seine.) Magnan.

98. **Wine and Cider in Gout.**—Motais reports eight cases of gout, in which he tested the effect of wine and cider. The wine used was the red Bordeaux wine, and his conclusions are, 1, that the use, even in moderate quantities, of the red Burgundy or Bordeaux wine, while it may not produce gout in healthy individuals, is likely to be injurious to those predisposed to gout or who are suffering from the disease. 2. A mild cider well made, but not too hard, prevents gout; combined with rational diet and exercise it becomes a genuine therapeutic agent, diminishing or even reducing the frequency and intensity of the attacks. 3. The attention of therapeutists should be drawn to the action of cider in gouty affections of the eye. 4. While without doubt the pathogeny of arthritic affections is variable and such conclusions may not apply to all cases of the disease, yet the author believes that cider should be not merely allowed to gouty patients, but should be prescribed to the majority as a habitual, perhaps exclusive, beverage.

100. **Cholesterinemia in Syphilitics.**—Gaucher, Paris and Desmoulière have investigated the amount of cholesterin in syphilitic blood-serum and conclude as follows: 1. There exists no evident parallelism between the amount of cholesterin in the blood-serum and the results of the Wassermann reaction. 2. The influence of mercury or arsenic on cholesterinemia is not marked. 3. The effects of syphilis on the amount of cholesterin in blood may be distinguished according to whether the case is recent or old. In recent cases the changes are slight and variable. On the other hand, in old syphilitics an excess of cholesterin in the blood seems to be the rule.

101. **Culture of the Spinal Ganglia of Mammalia in Vitro by Carrel's Method.**—Marinesco and Minea have experimented according to the method of Carrel by transplanting pieces of the spinal ganglia of rabbits and kittens into plasma prepared from animals of the same species. They found that while the cells of the central portion degenerated, those of the periphery grew for a time and sent out fibers some of which passed into the surrounding plasma.

102. **Meningitis From the Parameningococcus.**—Widal and Weissenbach refer to the researches of Dopter and others, showing the occurrence of meningitis produced by an organism closely resembling the meningococcus of Weichselbaum, but differing in its biologic characters. This organism has been distinguished by Dopter as the parameningococcus. Twelve

cases of this affection have been previously reported and Dopter has prepared a special serum to combat the infection. Widal reports another case of this disease, in which the use of ordinary antimeningococcus serum, prepared by the Pasteur Institute, was quite ineffective, but on the application of the antiparameningococcus serum prepared by Dopter the patient began to improve promptly. Widal suggests that a number of cases of meningitis apparently due to the meningococcus, but which were uninfluenced by meningococcus serum, were in reality due to the parameningococcus. In order to distinguish these cases, biologic tests must be made, the simplest of which is the agglutination test. The cerebrospinal fluid should be inoculated onto culture media and tests should be made to determine whether the organism obtained is agglutinated by meningococcus serum or by parameningococcus serum. If it is not affected by the meningococcus serum and it is agglutinated by parameningococcus serum, the latter serum should be employed as a remedy. Since in the majority of cases the disease is due to the meningococcus, there should be no delay in trying the antimeningococcus serum. In the discussion, Netter suggested that since at least forty-eight hours are requisite for distinguishing between the two organisms, it is very desirable that a serum should be immediately administered containing both antimeningococcus and antiparameningococcus serum. He believes that such a serum can be made, similar to the serum of Flexner, which is a polyvalent serum made from organisms some of which are agglutinated only to a slight degree by antimeningococcus serum. He refers especially to the researches of Elser and Huntoon, which showed a great difference in the agglutinability of different forms of the meningococcus. He reports a case in which the disease was not influenced by the serum prepared by the Pasteur Institute, but which recovered after two doses of Flexner's serum. He recommends therefore a polyvalent serum which might be produced in part by injections of the parameningococcus. (See Paris Letter in THE JOURNAL, Aug. 17, p. 536.)

Presse Médicale, Paris

July 13, XX, No. 57, pp. 593-604

104 The Tendencies of Psychiatry in France at the Present Day. (L'esprit de la psychiatrie française d'aujourd'hui.) J. Lepine.
105 *Action of *X*-Rays on Eosinophils. C. Aubertin and L. Giroux.
106 Industrial Accidents. Traumatic Stricture of Urethra. (Les rétrécissements traumatiques de l'urètre.) L. Imbert.

July 20, No. 59, pp. 613-620

107 Treatment with Preparations of the Hypophysis. L. Lagane.

July 24, No. 60, pp. 621-628

108 *Newer Conception of the Venous Pulse. O. Josué.
109 *Tonicity of Mineral Waters Used as Local Applications. (Tonicité de quelques eaux minérales.) P. J. Ménard.

July 27, No. 61, pp. 629-640

110 *Cytology and Serology of Leprosy. E. Jeanselme.
111 Multiple Osseous Dystrophies. L. Baumel.

July 31, No. 62, pp. 641-648

112 *Transfusion of Blood. (La transfusion du sang.) M. Tuffier.
113 *Percussion of the Liver. (Exploration du foie au moyen de la percussion.) W. Orlowski.

105. Action of X-Rays on the Eosinophils.—Aubertin and Giroux conclude that the *x*-rays cause a general increase in leukocytes of all kinds, which is followed by a destructive action. In normal subjects this results in an increase of the neutrophils. In patients with myeloid leukemia the neutrophils are also chiefly increased because these cells are still in a large majority in the blood, although much modified. In a case reported by the authors, in which the eosinophils reached 65 per cent., the leukocytosis was especially an eosinophil leukocytosis. The *x*-rays therefore do not act on the blood like the infections which produce an exclusively neutrophil reaction; they act equally on the eosinophils. In moderate doses they cause these cells to migrate into the blood, as in the patient reported. In larger doses they destroy them, as in the case of leukemic patients treated by the *x*-rays.

108. Newer Conception of the Venous Pulse.—Josué contrasts the older idea of a venous pulse with the new view resulting from recent investigations. Formerly two forms of venous pulse were distinguished, a true venous pulse supposed to be due to the actual propulsion of blood waves through an insufficient tricuspid valve and a false venous pulse occurring before the systole as the result of the contraction of the right auricle. The physiologic or normal venous pulse presents a certain analogy with the older false pulse since it shows a presystolic wave corresponding to the contraction of the auricle.

The condition formerly known as the true venous pulse which is synchronous with the ventricular systole is observed in certain cases but has a significance different from that which was formerly attributed to it. This form of venous pulse is found in patients presenting complete arrhythmia at the same time with a marked venous stasis. In these cases no wave corresponding to the auricular contraction is found and the wave corresponding to the ventricular contraction tends to occur earlier and eventually coincide with the wave c. There is thus only a single wave coinciding with the contraction of the ventricle. This wave is not due, as was formerly supposed, to an actual reflux of the blood through an insufficient tricuspid valve, but occurs because the pressure being very high in the veins, the auricle closed below by the tricuspid valve is immediately filled. The absence of the auricular wave "a" was at first attributed by Mackenzie to paralysis of the auricle. Later he believed that it was due to the fact that the contraction of the auricle occurred simultaneously with that of the ventricle, the impulse arising from the auriculoventricular node of Tawara. This is the nodal rhythm of Mackenzie. More recent investigation has indicated the importance of auricular fibrillation in preventing the formation of an auricular wave.

109. Tonicity of Mineral Waters.—Ménard calls attention to the importance of the molecular constitution of mineral waters which are used for local applications to the mucous membranes. He has made an examination of a large number of these mineral waters and among fourteen samples he found two whose freezing point indicated a molecular value hypertonic to that of the blood. The rest were hypotonic. He suggests that the hypertonic waters be reduced to the molecular concentration of the blood by dilution with distilled water. On the other hand, the molecular concentration of hypotonic waters can be brought up to that of the blood by the addition of a solution of sodium chlorid.

110. Serology of Leprosy.—Jeanselme reviews the investigations which have been made of the serum of leprous patients, specially with reference to its reaction by deviation of complement on the application of an antigen made by mincing a leproma, this reaction being known as Eitner's, and to its response to the Wassermann reaction. As a result of his own investigations he found that of forty serums of patients with active syphilis, in which the Wassermann reaction was positive, the reaction with Eitner's antigen gave thirty-three positive results and seven negative; that is, the reaction of Eitner was positive in 85 per cent. of syphilitic patients. In twenty-one cases of healthy men or persons with latent syphilis the reaction of Wassermann and the reaction of Eitner gave equal results. The reaction of Eitner, when it is positive with leprosy, is, as a rule, but not always, accompanied by a positive Wassermann reaction. The antigen of Wassermann and the antigen of Eitner may give a deviation of complement either with a leprous or with a syphilitic serum. The antigen of Eitner is always more sensitive to leprosy and the antigen of Wassermann more sensitive to syphilis, thus indicating that the substances in the serums on which these antigens act are related, but not identical. While in syphilitic patients specific treatment causes the disappearance of the Wassermann reaction, the phenomenon is not exhibited by leprous patients. In one case the author found that the Wassermann reaction in a leprous patient persisted in spite of energetic treatment with salvarsan. This indicates that the response of leprous patients to the Wassermann reaction is not due to syphilis the symptoms of which have been obscured by the leprous condition.

112. Transfusion of Blood.—Tuffier presents a simplified technic for transfusion: There are needed three silver tubes coated with paraffin; two pairs of hemostatic forceps, with a very light spring and a large flat grasp; three Halsted forceps with very fine points, one curved and two straight;

two very fine dissecting forceps and an irrigator, fine silk, fine scissors and a bistoury. The tubes are 3 cm. long and enlarged at both ends and have a diameter of 1.5, 2 and 2.5 mm. They are coated with paraffin melting at 50 C. by plunging the sterilized tube in clear paraffin heated to 130 C., withdrawing and shaking to remove excess of paraffin. A healthy young adult should be selected as the donor. Examination for agglutination and hemolysis, abandoned by Crile, is unimportant. Tuffier always applies the Wassermann test. During the operation the two subjects are placed on adjacent tables and the radial region of the donor and the internal premalleolar of the receptor are sterilized by iodin and anesthetized with stovain. The internal saphenous vein of the receptor is exposed and freed by cutting and tying all the small veins which may hold it. The wound is covered with liquid petrolatum and then with a compress wet with salt solution. The radial artery of the donor is exposed and isolated for a length of 5 cm. and any troublesome arterioles are tied with fine silk and cut. The artery is tied at the lower extremity of the wound and a small hemostatic forceps is placed on the upper part of the exposed artery, care being taken that it does not slip. The vessel is cut obliquely with the scissors for nearly two-thirds of its width above the ligature; a triangular wound is thus produced. The two lips of the wound being held by fine forceps, a tube which should be rather larger than the diameter is introduced just beyond the point of its enlargement and a thread is passed around the artery to hold the tube in place. The radial region of the donor is brought close to the malleolar region of the receptor; the vein is tied completely, cut at its lower part, and freed for 4 to 5 cm. The interior is irrigated with a special syringe. The end of the tube is immediately introduced into the vein and the latter is tied over it above the enlargement. The hemostatic forceps are removed and blood flows from the artery into the vein causing appreciable pulsations. During the whole operation it should be noticed every two minutes whether the vein is carrying the blood well, and care should be taken to palpate 1 or 2 cm. above the anastomosis to avoid the error which consists in taking a propulsion of the arterial blood wave for a true expansion of the vein.

When the transfusion is ended the artery is tied above the tube and cut between the tube and the ligature. The vein is tied below the tube with a catgut thread and cut in such a manner that in removing the tube it takes with it the two pieces of vessels which were tied to it.

113. **Percussion of the Liver.**—Orlowski describes his method of applying Goldscheider's threshold percussion to the determination of the lower border of the liver. While the patient is lying on the back with legs extended, he percusses along the right mammillary line and also along the linea alba. The index finger of the left hand is laid on the surface of the abdomen, making very light pressure so as to avoid vibrations from deeper-lying organs. With the fingers of the right hand blows are made so feeble that the sound can only be heard close to the finger which is struck, and these blows are always applied parallelly to the linea alba and perpendicularly to the surface of the abdomen. Complete silence must be obtained. The author has compared this method with that of palpation and draws the following conclusions: 1. Orthopercussion (threshold percussion) of the lower border of the liver is a very exact method of examination, equaling that of palpation. 2. A floating kidney, if present, should be returned to its place, as otherwise orthopercussion will in many cases determine not the lower border of the liver but that of the kidney. If the region below the right hypochondrium gives a dull sound by ordinary percussion, it is not unusual (18 per cent.) for orthopercussion to produce a dull note over the whole extent of this region. In such case in order to determine the position of the lower border of the liver it is necessary to inflate a part of the intestine with air. 3. In cases in which the lower border of the liver is more or less sharply defined and where coils of intestine adjoining this are inflated, orthopercussion determines the position of the lower border of the liver nearer to the hypochondrium than is really the case. 4. The consistence of the liver has an influence on the result of the determination of its lower border. Thus the position of this border of the liver, determined by means of orthopercussion, corresponds more frequently to its real position when the liver is firm than in cases in which it is soft. In fact, in firm livers Orlowski has observed that in 92 per cent. of cases the result of orthopercussion corresponded to the real position of the lower border of this organ, while in cases in which the liver was soft this was true only in 86 per cent.

Semaine Médicale, Paris

July 24, XXXII, No. 30, pp. 349-360

114 *Radical or Partial Extirpation in the Treatment of Genital Cancer of the Female. R. de Bovis.

July 31, No. 31, pp. 361-372

115 *Secretion of Chlorids by the Kidneys in Nephritics with Edema. F. Widal, L. Ambard and A. Weill.

August 7, No. 32, pp. 373-384

116 Hysterical Disturbances in Breathing, with Spasm of the Vocal Cords. G. Marinesco.

114. **Treatment of Uterine Cancer.**—De Bovis discusses the value of the enlarged operation of Wertheim for cancer of the uterus, and concludes that it has been somewhat modified because it has been recognized that beyond certain anatomic limits the benefits are overcome by the immediate excessive mortality. De Bovis is less inclined than Theilhaber to lay stress on the benefits obtained by partial operations and the extraordinary cures which sometimes follow them. These are exceptions which should not be too strongly emphasized. They prove, however, one thing, that there is a difference between cancerous patients. Some are bound to undergo evolution and metastasis, while others have a slower course. The latter are fortunate; whatever the operative technic, the result is remarkable success. The operation, however, should preferably be made extensive while remaining within the limits of human endurance, for, after all, we have no criterion to determine in advance what course an individual cancer will take.

115. **Renal Excretion of Chlorids in the Edema of Bright's Disease.**—Widal, Ambard and Weill report four cases illustrating the influence of a salt-free diet and of theobromin on the threshold for the excretion of chlorids by the kidney. This threshold was found to be considerably raised in cases of edema, varying according to the degree of reduction of chlorids. The salt-free diet tends to counteract this elevation of the threshold for chlorid excretion. The operation may be slow at first, and exceptional patients are found who do not respond to this dietetic treatment. In most nephritics, with edema, however, it is possible, at will, by giving or withholding salt to produce along with the appearance or disappearance of the edema an elevation of the threshold for renal excretion of chlorids, or its return to the normal. Theobromin acts on the excretion of chlorids in the same way as the salt-free diet, producing a marked reduction of the threshold. Thus theobromin has an action on the kidney directly antagonistic to that of sodium chlorid. It occasionally fails to produce any effect. The authors find that nephritics without edema have little or no retention of chlorids, while in those with edema such a retention is more or less marked.

Berliner klinische Wochenschrift

July 22, XLIX, No. 30, pp. 1405-1452

117 *Serotherapy of Tumors. (Heilversuche an geschwulstkranken Tieren mittels tumoraffiner Substanzen.) C. Neuberg, W Caspari and H. Löhe.

118 Congenital Hypoplasia and Multiple Sclerosis of Ductless Glands. (Spätenuncholdismus.) W. Falta. Concluded in No. 31.

119 Keeping Quality of Scopolamin Solutions. (Haltbarkeit.) F. Sachs.

120 *Auscultation and Percussion of Organs and Neoplasms in Abdominal Cavity. R. Ehrmann.

121 Duodenal Alimentation. (Duodenalernährung.) M. Einhorn.

122 Increasing Mammary Gland Secretion by Increasing Albumin in Food. W. Liepmann.

123 *Barium Sulphate. (Warnung und Aufklärung in Sachen des Baryumsulfats.) G. Schwarz.

July 29, No. 31, pp. 1453-1500

124 Chemotherapy in Trypanosome Infections. (Trypanosoma Brucei.) L. Brieger and M. Krause.

125 Mutation and Adaptation of Microorganisms. H. Pringsheim.

126 Mechanism of Anaphylatoxin Formation by Bacteria. (Anaphylatoxinbildung aus Bakterien.) H. Frösch.

127 *Anatomic Study of Pneumogastric Nerve in Hypertrophy of Heart. (Nervus depressor bei Herzhypertrophie.) E. Ludwig.

128 *Etiology of Malignant Granuloma. O. Meyer and K. Meyer.

129 Neosalvarsan. C. Gutmann.
130 Clinical Observations in Diphtheria Epidemic of 1911. O. Nordmann.
131 Technic of Roentgen irradiation in Gynecologic Region. E. Runge.
132 Congenital Hypoplasia and Multiple Sclerosis of Ductless Glands. W. Falta.

August 5, No. 32, pp. 1501-1548

133 Treatment of Bacterial Infections with Chemicals. (Behandlung der bakteriellen Infektionen im Organismus durch Chemikalien.) F. Blumenthal.
134 *Intra-arterial Therapy. F. Bleichröder.
135 Etiology and Pathology of Tabes Dorsalis. M. Bernhardt.
136 A Simple Method for Determining the Heart Boundaries with Roentgenoscopy. (Röntgenherzgrenzenbestimmung.) J. Spier.
137 *Oxaluria. E. Rosenberg.
138 *A Simple Method for Determining Free Hydrochloric Acid in the Stomach. Friedrich.
139 *Blood Findings in Diabetes Mellitus. L. Caro.
140 Pharmacology of Cascara Sagrada. Flury.
141 Experimental Syphilis in Guinea-Pigs. I. Finkelstein.
142 Functional Kidney Diagnosis. W. Baetzner.
143 Rest Cure at Sea. (Ueber Liegekurschiffe und Liegekuren auf See.) M. Senator.

117. **Serotherapy of Tumors.**—The authors confined their experimental research to the use of various metals in the treatment of mouse carcinoma. The best results were obtained with combinations of copper, zinc, platinum and especially with cobalt and silver. The result of the administration of these metals was that the tumors softened and became necrotic. Microscopic examination of the tissues showed deposits of the various metals used. Although the effect on the tumors was a considerable one, the animal itself did not exhibit any untoward symptoms; both spontaneous and experiment tumors were affected similarly, but the treatment produced the most marked results in the cases of mouse tumors. A very careful search of the tissues in which the tumor had been situated failed to disclose any tumor cells. The authors give a complete list of the metals used and the dosage per gram of body-weight of the mouse. (See editorial in THE JOURNAL, Aug. 31, p. 724.)

120. **Auscultation and Percussion of Organs and Neoplasms in Abdominal Cavity.**—The method employed by Ehrmann consists in having the patient in the dorsal position and then pushing the abdomen upward by means of deep inspiration. This not only presses the organs nearer to the abdominal wall but also pushes them downward into the abdomen. He has succeeded in outlining the gall-bladder in a number of cases in which the ordinary percussion failed absolutely. The spleen, liver and kidneys were likewise outlined with ease. With regard to tumors in one case in which the diagnosis of mesenteric swelling was made, the abdominal pressure showed very distinctly that the mass was in the urinary bladder. He believes that abdominal and non-suppurating inflammations in the vicinity of the appendix can be outlined by this method. As for the stomach and intestines these organs can easily be outlined and the findings verified by means of skiagrams.

123. **Barium Sulphate in Roentgenoscopy.**—Schwarz sounds a warning as to the use of barium sulphate in making skiagrams of the stomach and bowels because of the possibility of using a poisonous barium sulphid. He has been advised of several instances of poisoning. He would have a careful chemical examination made of the barium sulphate that is to be used for skiagraphic work and then label it so that no mistake can be made.

127. **Anatomic Study of Pneumogastric Nerve in Hypertrophy of Heart.**—A very careful study of sixty-three cases with regard to the relationship existing between heart hypertrophy and the influence of the nervous system on the heart has convinced Ludwig that no nerve disturbance is characteristic of cardiac hypertrophy. Any alteration which may be found present he believes to be merely incidental. The same is true in cases of enlargements of the ascending aorta although here one frequently finds lymphocytic infiltration as well as free hemorrhage or residual evidences of hemorrhage, without, however, in any way interfering with nerves or ganglia. Nevertheless, the author emphasizes the fact that the depressor nerve must be regarded as a safety valve of the heart and that anything which interferes with this action may cause a cardiac hypertrophy. He still fears, in spite of his negative histologic finding, that the depressor nerve stands in some relationship physiologically to the blood-pressure, variations and enlargement of the heart.

128. **Etiology of Granuloma.**—The authors have investigated the exciting cause of malignant granuloma clinically as well as experimentally and are convinced by their findings that the Fraenkel-Much bacillus is in reality a variant of the tubercle bacillus. The authors report one case of typical malignant granuloma of the lungs and lymph-nodes associated with a miliary tuberculosis of the liver, spleen and kidneys. No primary tuberculous focus was demonstrable elsewhere in the body. They cite evidence to the effect that this granulomatous bacillus may be transported from the seat of granulomatous disease to other parts of the body and there produce a typical tuberculous lesion. Reasons for these morphologic and biologic variations of this organism have not been determined.

134. **Intra-Arterial Therapy.**—Bleichröder harks back to a series of experiments made by him several years ago in which he attempted to investigate the process of metabolism by withdrawing blood directly from the inferior vena cava at the mouth of the hepatic vein by means of a catheter. This work led to the thought that it might be possible to inject medicinal agents into the arterial blood-stream in a similar manner. Experiments on dogs confirmed the correctness of his belief and also demonstrated the fact that the method was free from danger. Before trying out the method on the human being he experimented on his own person; a catheter was inserted into the vein of the lower arm and passed up to the axilla. A second catheter entered a vein of the thigh extending into the vena cava. These experiments were negative in that they were not followed by any untoward effect. The author has utilized this method in the treatment of puerperal sepsis. The result was not particularly encouraging although the cases in which it was tried were of the very worst type and little was to be expected from any method of treatment. In one case collargol was injected in the twenty-four days of the disease, resulting in a crisis which could be charged to no other circumstance than the treatment. The injection was made through the femoral artery by means of a ureteral catheter. He believes the method is worthy of further trial.

137. **Oxaluria.**—The author reports two cases of transitory oxaluria associated with gastro-intestinal disturbances. He is convinced that the intestinal trouble was the unquestioned cause of the oxaluria, although he does not offer any explanation as to how this cause affected the metabolism so as to produce oxalic acid.

138. **A Simple Method for Determining Free Hydrochloric Acid in the Stomach.**—Friedrich uses neither sound nor special apparatus. His method consists in producing the necessary chemical reaction directly in the stomach by means of threads saturated with congo red. A small metal cylinder with rounded edges is enclosed in a capsule and attached to a long thread dyed with congo red; another dyed with one free end is attached to the cylinder and enclosed with it in the capsule. This capsule with its enclosed metal cylinder is swallowed readily by the patient, twenty minutes after the usual test breakfast has been given. Half an hour later, it is withdrawn by means of the long thread and according to the evidence of the reaction on the thread will depend the amount of free hydrochloric acid. The author has had no difficulty in getting his patients to swallow this capsule and he has repeatedly verified his findings by means of other tests. It should be mentioned here that the long thread is dyed a deep red, whereas the short thread is dyed pink, so that the degree of reaction may be noted. The author has laid down the following scale of the reaction for himself: browning of the dark red thread indicates subnormal acid; violet, normal; blue-black, above normal or hyperchlorhydria. In the presence of hyperchlorhydria, the pink thread is colored blue, if the condition is of high grade, and sky blue if the hyperchlorhydria is extremely intense. The reaction must be noted immediately when the thread is withdrawn and before it is touched with fingers or instruments.

139. **Blood-Findings in Diabetes Mellitus.**—Caro studied the blood in twenty-eight cases of diabetes mellitus. He invariably found a reduction of hemoglobin and a decrease in the number of red cells. He failed to find leukocytosis. In twenty-two cases there was a relative lymphocytosis, in fifteen cases as high as 40 to 70 per cent. In only six cases was the lymphocytosis slight in degree. These patients invariably suffered from gangrene, tuberculosis, etc. In eight cases there was a distinct eosinophilia. The degree of lymphocytosis was not an indication of the severity of the case or of the amount of sugar found in the urine.

Münchener medizinische Wochenschrift

July 23, LIX, No. 30, pp. 1641-1696

144 *Idiosyncrasy Against Salvarsan. (Zur Frage der Idiosynkrasie gegenüber Salvarsan, insbesondere sind Hautimpfungen mit Salvarsanlösungen zur Feststellung einer vorhandenen Idiosynkrasie brauchbar?) K. Zieler.
145 Examination and Treatment of Isolated Pupillary Disturbances Resulting from Previous Syphilis. (Bedeutung der modernen Untersuchungs- und Behandlungsmethoden für die Beurteilung isolierter Pupillenstörungen nach vorausgegangener Syphilis.) G. L. Dreyfus.
146 *Determination of Diphtheria Bacilli. H. Conradi and P. Troch.
147 Calcium Chlorid for Enriching Tubercle Bacillus. (Einige weitere Erfahrungen mit dem Kalziumchlorid-Anreicherungsverfahren für Tuberkelbazillen.) A. Zahn.
148 Urethrothermic Therapy. P. Scharff.
149 Treatment of Urethral Stricture by Means of Bougies Causing Hyperemia. P. Kobelt.
150 Palliative Treatment of Prostatic Hypertrophy. H. Joseph.
151 Roentgenoscopy of Lung Apices. F. Holst.
152 Pituitrin as a Postoperative Tonic. (Pituitrin als postoperatives Tonikum, mit besonderer Berücksichtigung der Blasenfunktion.) R. T. Jaschke.
153 *A Comparison Microscope. W. Thorner.
154 Acetonemia in Children. L. Silberstein.
155 Reinfection After Salvarsan Treatment. H. Wüstenberg.
156 Three Fatalities Following Use of Salvarsan. F. Hirsch and F. Hammer.
157 Acute Traumatic Origin of Retroflexion of Uterus. R. Ziegenspeck.
158 *Perforation of Rectum Due to Rectoscopy. O. Retzlaff.
159 Local Cutaneous Gangrene Caused by Luminal Injection. K. Fürer.

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160 Epilepsy. (Die Epilepsie als klinischer Krankheitsbegriff.) L. W. Weber.
161 The Significance of Toxic Products of Decomposition of Albumin in Labor and Eclampsia. (Ueber die Bedeutung der Eiweisszerfallstoxikose bei der Geburt und der Eklampsie.) R. Franz.
162 Neosalvarsan in Syphilis. A. Wolff and P. Mulzer. (Erfahrungen mit Neosalvarsan.) K. Kall.
163 Electromagnetic-Arsenical Treatment of Cancer. (Die ersten Versuche mit einer neuen Kombinationsbehandlung des Krebses. Elektromagnetische Reizarsenbehandlung.) H. Spude.
164 Atophan. H. Bach.
165 *Fracture of Femur of Child During Birth. (Zwei merkwürdige Fälle von Oberschenkelfraktur des Kindes unter der Geburt.) Bertkau.
166 *Plastic Operation on Rectum. (Plastischer Ersatz des vorderen Teils des Mastdarmrohrs durch die hintere Scheidenwand.) W. Goebel.
167 Iron Content of Human and Cow's Milk. (Ueber den Eisengehalt der Frauen- und Kuhmilch.) L. Langstein and F. Edelstein.
168 Wassermann Reaction in the Cadaver. G. B. Gruber.

144. **Idiosyncrasy Against Salvarsan.**—Zieler emphasizes the fact that the occurrence of a skin eruption after the use of salvarsan is to be regarded as an idiosyncrasy against arsenic. He would not consider this condition analogous to the serum disease, caused by anaphylaxis. On the contrary it is merely a cumulative effect, which may be manifested after a single injection of salvarsan. He has never observed or heard of an hereditary idiosyncrasy and therefore it is impossible to determine the existence of such an idiosyncrasy by means of a salvarsan vaccination.

146. **Determination of Diphtheria Bacilli.**—The authors have used a new culture medium for isolating the diphtheria bacillus. Ten gm. of meat extract, 5 gm. of sodium chlorid, 20 gm. of peptone [Witte] and 6 gm. of calcium acetate are added to 1,000 c.c. of water. The mixture is placed over the water-bath for one-half hour and filtered. The filtrate is slightly acid and 1 per cent. of grape-sugar is added to it. One part of this mixture is added to three parts of fresh sterile blood-serum and to 100 c.c. of this blood-serum mixture 2 c.c. of a 1 per cent. solution of potassium tellurite is added. The mixture is then shaken and distributed in Petri dishes. The mixture is allowed to congeal and is then ready for use. The original culture of the suspected material is made on Loeffler's blood-serum. The culture is incubated for three hours at 35 C. and then a culture is made from it on the tellurium plate. This plate is incubated for twenty hours at 35 C. and the original Loeffler plate is allowed to continue development and growth for eight hours so as not to interfere with examination of such bacilli as have developed in this plate. If diphtheria colonies are visible on the Loeffler plate, further examination of the tellurium plate is unnecessary. If, however, the former fails to show any diphtheria cultures, the latter must be examined. The diphtheria colonies will be colored black, the result of a reduction of the tellurium dioxid. Even the diphtheria bacillus contains these dark spots. The authors have had splendid results clinically from the use of this method of examination.

153. **A Comparison Microscope.**—This instrument is constructed on the basis of a stereoscope and serves to compare normal with pathologic tissues. It is practically two microscopes with a single eye-piece, connecting the two tubes, so that half of the field may, for example, show a normal lung section and the other a pathologic section.

158. **Perforation of Rectum Due to Rectoscopy.**—Retzlaff reports a case of perforation of the rectum of a man, 58 years of age, the result of a rectoscope examination. The patient was examined in the knee-chest position and suddenly complained of abdominal pain. He went home and succeeded in having a bowel movement. In the afternoon he had severe intestinal colic, with vomiting, but soon collapsed. A laparotomy was done four and one-half hours after the rectoscopy. There was every evidence of an intense peritonitis, and in the anterior wall of the rectum, just above the rectovesical space, was a tear 2 cm. in length, through which the rectal mucosa protruded. The tear in the bowel wall was sutured, the intestinal loops were cleaned with wet compresses and 80 c.c. of a 10 per cent. camphorated oil were poured into the pelvis. The patient made a complete recovery.

165. **Fracture of Femur at Birth.**—Bertkau reports two cases. The first was a favorable presentation with contracted pelvis and prolapse of the umbilical cord. The author performed version, grasping the left foot of the child so that when traction was made the right leg was drawn up and the thigh was flexed on the body. The child was delivered without any trouble. While it was being bathed it was noticed that there was a fracture of the right femur at the junction of the upper and middle thirds. In the second case the fetus was in the transverse position, the left arm presenting. The extraction was accomplished in the same manner as in the previous case, although during the delivery there was a slight obstruction which was readily overcome by a strong tug on the left leg, when a distinct cracking sound was heard. Delivery was then effected without any further trouble. The child cried as soon as it was born and on examination it was found that the femur was fractured as in the first case. Both fractures were treated by extension and the application of a plaster cast.

166. **Plastic Operation on Rectum.**—Goebel reports the case of a woman 60 years of age who had a scirrhotic carcinoma of the anterior wall of the rectum. The tumor was removed and the rectum drawn down to the anal margin and sutured. The result apparently was a good one but there soon appeared a rectal fistula opening into the vagina, just below the cervix. On examination it was found that the rectum and vagina had become firmly united into a cicatricial mass. This fact and the age of the patient made it impossible to do a second operation like the first; therefore the author dissected free from the lateral vaginal wall a flap of mucosa which he turned around into the rectum, so that the vaginal mucous membrane became the rectal mucous membrane. A further plastic operation was done in the vagina to cover the defect. The patient made a splendid recovery from the operation and six months afterward was apparently in perfect health. She had gained in weight, looked well and the carcinoma apparently had not recurred. The vagina was somewhat constricted. The patient did not complain of any intestinal disturbance, and she had perfect control of the rectum.